



**VIKRAMA SIMHAPURI UNIVERSITY**  
Nellore, S.P.R. Nellore Dist.- 524 324, Andhra Pradesh, India

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List of courses which address the Human Values & Professional ethics gender Sensitization, environment and Sustainability

**BTT-401A: ENVIRONMENTAL BIOTECHNOLOGY  
(ELECTIVE-3)**

SEMESTER-IV	ELECTIVE-3	THEORY	60 HOURS	4 CREDITS
<p><b>Course Objectives:</b> This course aims to introduce fundamentals of Environmental Biotechnology. The course will introduce major groups of microorganisms-tools in biotechnology and their most important environmental applications. The environmental applications of biotechnology will be presented in detail and will be supported by examples from the national and international literature.</p> <p><b>Course Learning Outcomes (CLO):</b> On completion of the course, students will be able to.....</p> <ol style="list-style-type: none"><li>1. Understand use of basic microbiological, molecular and analytical methods, which are extensively used in environmental biotechnology.</li><li>2. Explore the microorganisms present in different environments and their estimations,</li><li>3. Identify various recalcitrant pollutants in the environment and molecular approaches to environmental management, and application of biotechnology to assess and control pollution,</li><li>4. Understand the biodegradation and bioremediation processes used in the clean-up of the environments, and</li><li>5. Explain various methods for treatment and disposal of industrial effluents.</li></ol>				

**UNIT-I: ENVIRONMENT & MICROORGANISMS**

Concept of environment – Structure, function and development. Brief account of the habitat for microorganisms – Soil, water and atmosphere. Microbiology of soil – Diversity, abundance of predominant microorganisms, methods of isolation and estimation. Beneficial and antagonistic interactions among microorganisms. Microbiology of air – Microorganisms and microbial propagules in air, techniques for microbial analysis of air, air-borne pathogens. Microbiology of water – Plankton populations, water-borne pathogens, detection methods for water-borne pathogens, methods of sampling and estimation of water microflora, control of enteric pathogens. BOD and COD measurements.

**UNIT-II: ENVIRONMENTAL POLLUTION & MANAGEMENT**

Microbial contribution to pollution - pollution by pathogenic microbes, pollution with oxygen-demanding carbonaceous materials, mineral pollutants, heat pollution, pollution by recalcitrant chemicals, oil pollution. Molecular approaches to environmental management – Extracellular genetic transfer, genetic modification, tracking genes in the environment, genetic ecology, application of biotechnology to assess and control pollution.

### **UNIT-III:BIODEGRADATION&BIOREMEDIATION**

Microbial degradation of environmental pollutants – Isolation of microorganisms degrading environmental pollutants by enrichment culture, Recalcitrance of pesticides in soils, their influence on soil micro flora, microbial degradation of pesticides with special reference to

DDT, genetic exchange in degradation of xenobiotic chemicals. Effect of acid rain on soil microbial processes. Petroleum Microbiology – Historical developments, environmental aspects, deterioration of products, petroleum and petrochemical spills, oil recovery, microbial oxidation of hydrocarbons, microbial products from hydrocarbon fermentations, biosynthetic and transformation products. Bioremediation, role of transgenic bacteria.

### **UNIT-IV:TREATMENTOFINDUSTRIAL EFFLUENTS**

Treatment and disposal of industrial effluents – Physical, chemical, and biological treatment. Aerobic process–Trickling filters, towers, biologically-aerated filters (BAFs), rotating biological contactors (rotating disc contactors), rotating drums, fluidized-bed systems, activated sludge process. Anaerobic treatment–anaerobic digestion, anaerobic digesters, anaerobic filters, up-flow anaerobic sludge blankets (UASB). Newer approaches to sewage treatment–starter cultures for treatment processes. Aerobic sewage treatment–Airlift process; aeration with pure oxygen, methane production. Disposal of effluents into seas and rivers, lagoons (oxidation ponds), spray irrigation, well disposal, landfilling, incineration, disposal of effluents of sewers.

#### **Recommended Books & References:**

1. Environmental Microbiology by Mitchell. 2009, John Wiley and Sons.
2. Environmental Microbiology by Grant and Long. 1981, Wiley.
3. Environmental Microbiology: A Laboratory Manual by Pepler, Gerba and Brendecke. 1995, Academic Press.
4. Microbial Ecology: Fundamentals and Applications (4th edition) by Atlas and Bartha. 1998, Pearson Education India.
5. Introduction to Soil Microbiology (2<sup>nd</sup> edition) by Alexander. 1977, Wiley.
6. Brock's Biology of Microorganisms (9th edition) by Madigan, Martinko and Parker. 2010, Benjamin-Cummings Publishing Company.
7. Soil Microorganisms by Gray and Williams, 1971, Oliver and Boyd.
8. Microbiology of the Atmosphere by Gregory. 1973, Wiley.

## **BTT-105:INTELLECTUALPROPERTY RIGHTS,BIOSAFETY&BIOETHICSOFBIO TECHNOLOGY**

### **UNIT-I**

Introduction to IPR: Introduction to intellectual property; types of IP: patents, trademarks, copyright & related rights, industrial design, traditional knowledge, geographical indications, protection of new GMOs; International framework for the protection of IP; IP as a factor in R&D; IPs of relevance to biotechnology and few case studies; introduction to history of GATT, WTO, WIPO and TRIPS; plant variety protection and farmers rights act; concept of „prior art“: invention in context of „prior art“; patent databases - country-wise patent searches (USPTO, EPO, India); analysis and report formation.

## UNIT-II

Patenting: Basics of patents: types of patents; Indian Patent Act 1970; recent amendments; WIPO Treaties; Budapest Treaty; Patent Cooperation Treaty (PCT) and implications; procedure for filing a PCT application; role of a Country Patent Office; filing of a patent application; precautions before patenting-disclosure/non-disclosure - patent application- forms and guidelines including those of National Bio-diversity Authority (NBA) and other regulatory bodies, fee structure, time frames; types of patent applications: provisional and complete specifications; PCT and conventional patent applications; international patenting- requirement, procedures and costs; financial assistance for patenting-introduction to existing schemes; publication of patents-gazette of India; commercialization of patented innovations; licensing – outright sale, licensing, royalty; patenting by research students and scientists- university/organizational rules in India and abroad, collaborative research - backward and forward IP; benefit/credit sharing among parties/community, commercial (financial) and non-commercial incentives.

## UNIT-III

Biosafety: Biosafety and Biosecurity - introduction; historical background; introduction to biological safety cabinets; primary containment for biohazards; biosafety levels; GRAS organisms, biosafety levels of specific microorganisms; recommended biosafety levels for infectious agents and infected animals; definition of GMOs & LMOs; principles of safety assessment of transgenic plants – sequential steps in risk assessment; concepts of familiarity and substantial equivalence; risk – environmental risk assessment and food and feed safety assessment; problem formulation – protection goals, compilation of relevant information, risk characterization and development of analysis plan; risk assessment of transgenic crops vs cisgenic plants or products derived from RNAi, genome editing tools.

## UNIT-IV

Bioethics: Introduction, ethical conflicts in biological sciences - interference with nature, bioethics in health care - patient confidentiality, informed consent, euthanasia, artificial reproductive technologies, prenatal diagnosis, genetic screening, gene therapy, transplantation. Bioethics in research – cloning and stem cell research, Human and animal experimentation, animal rights/welfare, Agricultural biotechnology – Genetically engineered food, environmental risk, labeling and public opinion. Sharing benefits and protecting future generations - Protection of environment and biodiversity – biopiracy.

### Recommended Textbooks and References:

1. Ganguli, P. (2001). Intellectual Property Rights: Unleashing the Knowledge Economy. New Delhi: Tata McGraw-Hill Pub.
2. National IPR Policy, Department of Industrial Policy & Promotion, Ministry of Commerce, Gov.
3. Complete Reference to Intellectual Property Rights Laws. (2007). Snow White Publication Oct.
4. Kuhse, H. (2010). Bioethics: An Anthology. Malden, MA: Blackwell.
5. Office of the Controller General of Patents, Design & Trademarks; Department of Industrial Policy & Promotion; Ministry of Commerce & Industry; Government of India. <http://www.ipindia.nic.in/>
6. Karen F. Greif and Jon F. Merz, Current Controversies in the Biological Sciences - Case Studies of Policy Challenges from New Technologies, MIT Press
7. World Trade Organisation. <http://www.wto.org>

**VIKRAMASIMHAPURIUNIVERSITY::NELLORE**

**SECONDSEMESTERSYLLABUSOFFOUNDATIONCOURSE**

(CommonforallPGandProfessionalProgrammesfromtheAcademicYear2020-21)

**PERSONALITYENHANCEMENT&LEADERSHIP**

**UNIT-I INTRODUCTION TO PERSONALITY ENHANCEMENT** - The concept personalityDimensions of theories of Freud & Erickson- personality – significant of personality development. The concept of success and failure: What is success? - Hurdles in achieving success - Overcoming hurdles - Factors responsible for success – What is failure - Causes of failure. SWOT analyses.

**UNIT-II ATTITUDE & MOTIVATION** - Attitude - Concept - Significance - Factors affecting attitudes - Positiveattitude-Advantages –Negativeattitude-Disadvantages-Waystodeveloppositiveattitude - Difference between personalities having positive and negative attitude. Concept of motivation - Significance - Internal and external motives - Importance of self-motivation- Factors leading to demotivation.

**UNIT-III SELF-ESTEEM** - Term self-esteem - Symptoms - Advantages - Do's and Don'ts to develop positive self-esteem – Low self esteem - Symptoms - Personality having low self esteem - Positive and negative self-esteem. Interpersonal Relationships – Defining the difference between aggressive, submissive and assertive behaviours - Lateral thinking.

**UNIT-IV INTRODUCTION TO LEADERSHIP** - Definition and meaning, Importance, Leadership and Management, Leader vs Manager, Essential qualities of an effective leader. Theories of Leadership: Trait theory, Behavioral theories, Contingency theory.

**UNIT-V LEADERSHIP CHARACTERISTICS** - Types of Leaders – Importance of Leadership – Leadership Skills – Building and Leading Efficient Teams – Leadership styles: Traditional, Transactional, Transformational, Inspirational and servant leadership and Emerging issues in leadership: Emotional Intelligence and leadership, Trust as a factor, Gender and Leadership. LeadershipQualities of Abraham Lincoln, Mahatma Gandhi, Prakasam Pantulu, Dr. B.R. Ambedkar and J.R.D. Tata.

**References:**

1. GirishBatra,ExperimentsinLeadership,Chennai:NotionPress,2018.
2. MiteshKhatri,AwakentheLeaderinYou,Mumbai:JaicoPublishingHouse,2013.
3. CarnegieDale,BecomeanEffectiveLeader,NewDelhi:Amaryllis,2012.

**6. RIGHTS, BIOSAFETY & BIOETHICS**

**UNIT-I Introduction to IPR:** Introduction to intellectual property; types of IP: patents, trademarks,

copyright & related rights, industrial design, traditional knowledge, geographical indications, protection of new GMOs; International framework for the protection of IP; IP as a factor in R&D; IPs of relevance to biotechnology and few case studies; introduction to history of GATT, WTO, WIPO and TRIPS; plant variety protection and farmers rights act; concept of 'prior art': invention in context of "prior art"; patent databases - country-wise patent searches (USPTO, EPO, India); analysis and report formation.

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**UNIT-III Biosafety:** Biosafety and Biosecurity - introduction; historical background; introduction to biological safety cabinets; primary containment for biohazards; biosafety levels; GRAS organisms, biosafety levels of specific microorganisms; recommended biosafety levels for infectious agents and infected animals; definition of GMOs & LMOs; principles of safety assessment of transgenic plants – sequential steps in risk assessment; concepts of familiarity and substantial equivalence; risk – environmental risk assessment and food and feed safety assessment; problem formulation – protection goals, compilation of relevant information, risk characterization and development of analysis plan; risk assessment of transgenic crops vs cisgenic plants or products derived from RNAi, genome editing tools.

**UNIT-IV Bioethics:** Introduction, ethical conflicts in biological sciences - interference with nature, bioethics in health care - patient confidentiality, informed consent, euthanasia, artificial reproductive technologies, prenatal diagnosis, genetic screening, gene therapy, M.Sc. Microbiology First Semester Syllabus Department of Microbiology, Vikrama Simhapuri University :: Nellore 11 transplantation. Bioethics in research – cloning and stem cell research, Human and animal experimentation, animal rights/welfare, Agricultural biotechnology - Genetically engineered food, environmental risk, labeling and public opinion. Sharing benefits and protecting future generations - Protection of environment and biodiversity – biopiracy.

#### **Recommended Textbooks and References:**

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4. Kuhse, H. (2010). Bioethics: An Anthology. Malden, MA: Blackwell.
5. Office of the Controller General of Patents, Design & Trademarks; Department of Industrial Policy & Promotion; Ministry of Commerce & Industry; Government of India. <http://www.ipindia.nic.in/>
6. Karen F. Greif and Jon F. Merz, Current Controversies in the Biological Sciences-Case Studies of Policy Challenges from New Technologies, MIT Press

### **MB T-401A: ENVIRONMENTAL MICROBIOLOGY (ELECTIVE-3)**

#### **SEMESTER-IV**

#### **ELECTIVE-3 THEORY Course Objectives:**

This course aims to introduce fundamentals of Environmental Biotechnology. The course will introduce major groups of microorganisms-tools in biotechnology and their most important environmental applications. The environmental applications of biotechnology will be presented in detail and will be supported by examples from the national and international literature.

**Course Learning Outcomes (CLO):** On completion of the course, students will be able to .....

1. Understand use of basic microbiological, molecular and analytical methods, which are extensively used in environmental biotechnology.
2. Explore the microorganisms present in different environments and their estimations,
3. Identify various recalcitrant pollutants in the environment and molecular approaches to environmental management, and application of biotechnology to assess and control pollution,
4. Understand the biodegradation and bioremediation processes used in the clean-up of the environments, and
5. Explain various methods for treatment and disposal of industrial effluents.

**UNIT-I: ENVIRONMENT & MICROORGANISMS** Concept of environment – Structure, function and development. Brief account of the habitat for microorganisms – Soil, water and atmosphere. Microbiology of soil – Diversity, abundance of predominant microorganisms, methods of isolation and estimation. Beneficial and antagonistic interactions among microorganisms. Microbiology of air – Microorganisms and microbial propagules in air, techniques for microbial analysis of air, air-borne pathogens. Microbiology of water – Plankton populations, water-borne pathogens, detection methods for water-borne pathogens, methods of sampling and estimation of water microflora, control of enteric pathogens. BOD and COD measurements.

**UNIT-II: ENVIRONMENTAL POLLUTION & MANAGEMENT** Microbial contribution to pollution - pollution by pathogenic microbes, pollution with oxygen-demanding carbonaceous materials, mineral pollutants, heat pollution, pollution by recalcitrant chemicals, oil pollution. Molecular approaches to environmental management – Extracellular genetic transfer, genetic modification, tracking genes in the environment, genetic ecology, application of biotechnology to assess and control pollution.

**UNIT-III: BIODEGRADATION & BIOREMEDIATION** Microbial degradation of environmental pollutants – Isolation of microorganisms degrading environmental pollutants by enrichment culture, Recalcitrance of pesticides in soils, their influence on soil microflora, microbial degradation of pesticides with special reference to DDT, genetic exchange in degradation of xenobiotic chemicals. Effect of acid rain on soil microbial processes. Petroleum Microbiology – Historical developments, environmental aspects, deterioration of products, petroleum and petrochemical spills, oil recovery, microbial oxidation of hydrocarbons, microbial products from hydrocarbon fermentations, biosynthetic and transformation products. Bioremediation, role of transgenic bacteria.

**UNIT-IV: TREATMENT OF INDUSTRIAL EFFLUENTS** Treatment and disposal of industrial effluents – Physical, chemical, and biological treatment. Aerobic process – Trickling filters, towers, biologically-aerated filters (BAFs), rotating biological contactors (rotating disc contactors), rotating drums, fluidized-bed systems, activated sludge process. Anaerobic treatment – anaerobic digestion, anaerobic digesters, anaerobic filters, up-flow anaerobic sludge blankets (UASB). Newer approaches to sewage M.Sc. Microbiology Fourth Semester Syllabus Regulations 2020-21 Department of Microbiology Vikrama Simhapuri University :: Nellore 2 treatment - starter cultures for treatment processes. Aerobic sewage treatment – Air lift process; aeration with pure oxygen, methane production. Disposal of effluents into seas and rivers, lagoons (oxidation ponds), spray irrigation, well disposal, landfilling, incineration, disposal of effluents of sewers.

**Recommended Textbooks & References:**

1. Environmental Microbiology by Mitchell. 2009, John Wiley and Sons.
2. Environmental Microbiology by Grant and Long. 1981, Wiley.
3. Environmental Microbiology: A Laboratory Manual by Pepller, Gerba and Brendecke. 1995, Academic Press.
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6. Brock's Biology of Microorganisms (9th edition) by Madigan, Martinko and Parker.2010, BenjaminCummings Publishing Company.

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**VIKRAMA SIMHAPURI UNIVERSITY:: NELLORE**

**SECOND SEMESTER SYLLABUS OF FOUNDATION COURSE**

(Common for all PG and Professional Programmes from the Academic Year 2020-21)

**PERSONALITY ENHANCEMENT & LEADERSHIP**

**UNIT-I INTRODUCTION TO PERSONALITY ENHANCEMENT** - The concept personalityDimensions of theories of Freud & Erickson- personality – significant of personality development. The concept of success and failure: What is success? - Hurdles in achieving success - Overcoming hurdles - Factors responsible for success – What is failure - Causes of failure. SWOT analyses.

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**References:**

1. Girish Batra, Experiments in Leadership, Chennai: Notion Press, 2018.
2. Mitesh Khatri, Awaken the Leader in You, Mumbai: Jaico Publishing House, 2013.
3. Carnegie Dale, Become an Effective Leader, New Delhi: Amaryllis, 2012.
4. Hall, C.S., Lindzey. G. & Campbell, J.B Theories of Personality. John Wiley & Sons, 1998.
5. 1998.
6. Organizational Behaviour, M. Parikh and R. Gupta, Tata-McGraw-Hill Education Private Limited.

<b>Third Semester</b>	<b>22R-FT3-GE-1: Food Industry Waste Management and by product Utilisation(Theory)</b>	<b>Hours/Week: 4; Credits: 4</b>
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<b>LEARNINGOBJECTIVES</b>
<ol style="list-style-type: none"> <li>1.To understand the student food processing industry waste management and re utilization</li> <li>2. To learn the student how to reuse food industry waste to produce energy from waste.</li> </ol>

**UNIT- I: Waste Utilisation from Rice Mill Industry**

Waste from rice mill industry – waste based furnace-Types, design-Utilization of rice husk-cement preparation, ceramic materials-Utilization of rice bran -problems in processing of rice bran-stabilization- methods of utilization- rice bran stabilizers-extraction of rice bran-refining-uses of bran, bran oil and defatted bran.

**UNIT-II: Utilisation of Fruit and Vegetables wastes**

Different sources of wastes from fruit and vegetable industries and their availability in India-Status and types of waste available- possible byproducts- Utilization of mango, citrus, apple, guava, grape waste-vinegar production-SCP production-organic acid production-Utilization of moringa, potato, leafy vegetable waste- Distillation for production of alcohol.

**UNIT-III: Fish and Poultry, Sea Food, Dairy Industry Waste, plastic waste Utilisation**

Fish industry by products- methods and production of fish meal, fish protein concentrate-fish and body oils- poultry waste recycling, Sea Food waste management, Dairy farm waste management,Recycling of polyolefins - PVC, PET, polystyrene, polyamides-nylon-6 and nylon-6,6, polyurethanes, mechanical process, applications of recycled materials.



#### **UNITIV: Tuber Crops waste Utilisation by Product Utilisation of Coconut Processing**

Tapioca waste utilization- furfural production methods-paper making from cellulosic waste  
Waste from Coconuts – uses of coir pith-biogas production-particle board-utilization of husk-  
coir fibre-shell- methods for production of shell charcoal- fuel briquette-machineries used.

#### **Recommended Readings**

1. P. N. Chereminoff & A.C Morresi, 1976, "Energy from Solid Wastes"
2. A. Chakravarthy & De, "Agricultural Waste and By Product Utilisation".
3. Bor S. Luli (ed), "Rice Production and Utilisation"
4. E. Beagle, "Rice Husk Conversion to Energy"



### **VIKRAMA SIMHAPURI UNIVERSITY::NELLORE DEPARTMENT OF FOOD TECHNOLOGY**

<b>Third Semester</b>	<b>22R-FT3MC-2:Food Packaging Technology (Theory)</b>	<b>Hours/Week: 4; Credits: 4</b>
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#### **LEARNING OBJECTIVES**

1. To acquaint students with the principles, methods, and materials used for safe packaging of foods
2. To familiarize students with packing of different food production and storage

#### **UNIT I: Introduction to food packaging in India**

Introduction to food packaging in India, need of packaging, Package requirements, package functions, Hazards acting on package during transportation & Storage, labeling laws, sustainable food packaging, recycling of packaging materials, FSSAI regulations in food packaging.

#### **UNIT II: Package Materials**

Package Materials: classification packages, paper as package material its manufacture, types, advantages corrugated and paper board boxes etc. Glass as package material, Manufacture, Advantages, disadvantages. Metal as package material manufacture, Advantages, disadvantages, Aluminum as package material, its advantages and disadvantages, Plastic as package material classification of polymers, properties of each plastics, uses of each plastics, chemistry of each plastic such as polyethylene, polypropylene, polystyrene, polycarbonate, PVC, PVDC, Cellulose acetate, Nylon etc.

#### **UNIT III: Lamination Coating**

Lamination Coating and Aseptic packaging Lamination need of lamination, types, properties, advantages & disadvantages of each type Coating on paper & films, types of coatings. Need of coating, methods of coatings. Aseptic packaging-Need, Advantages, process, system of aseptic packaging and materials used in aseptic packaging. Machineries used in packing foods.

#### **UNIT IV: Packaging of Specific Food**

Packaging of Specific Foods Packaging of specific foods with its properties, Like bread, Biscuits, Coffee, Milk powder, egg powder, carbonated beverages. Snack foods, R.T.S. beverages.

#### **Recommended Readings**

1. Hand book of Package Engineering Joseph F.Hanlon
2. Fundamentals of Packaging F.A. Paine
3. Food Packaging Sacharowand Griffin
4. Principles of Food Packaging R.Heiss
5. Flexible Packaging of Foods A.L. Brody
6. Food Packaging and Preservation M. Mathouth

<b>Fourth Semester</b>	<b>22R-FT4-OE-2</b> <b>Intellectual Property Rights (Theory)</b>	<b>Hours/Week: 4;</b> <b>Credits:4</b>
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#### **LEARNINGOBJECTIVES**

Students after completing these modules will be able to understand Research Methods and Biostatistics it's important in food industry.

#### **UNIT I: INTRODUCTION TO IPR**

INTRODUCTION TO IPR: Meaning of property, Origin, Nature, Meaning of Intellectual Property Rights, Introduction to TRIPS and WTO. Kinds of Intellectual property rights Copy Right, Patent, Trade Mark, Trade Secret and trade dress, Design, Layout Design, Geographical Indication, Plant Varieties and Traditional Knowledge.

#### **UNIT II: PATENT RIGHTS AND COPY RIGHTS**

PATENT RIGHTS AND COPY RIGHTS— Origin, Meaning of Patent, Types, Inventions which are not patentable, Registration Procedure, Rights and Duties of Patentee, Assignment and licence, Restoration of lapsed Patents, Surrender and Revocation of Patents, Infringement, Remedies & Penalties, COPY RIGHT—Origin, Definition &Types of Copy Right, Registration procedure, Assignment & licence, Terms of Copy Right, Piracy, Infringement, Remedies, Copy rights with special reference to software.

#### **UNIT III: TRADE MARKS**

TRADE MARKS— Origin, Meaning & Nature of Trade Marks, Types, Registration of Trade Marks, Infringement & Remedies, Offences relating to Trade Marks, Passing Off, Penalties. Domain Names on cyber space.

**UNIT IV: DESIGN, BASIC TENENTS OF INFORMATION TECHNOLOGY ACT-2000 – IT Act**  
DESIGN- Meaning, Definition, Object, Registration of Design, Cancellation of Registration, International convention on design, functions of Design. Semiconductor Integrated circuits and layout design Act-2000, BASIC TENENTS OF INFORMATION TECHNOLOGY ACT-2000 –

IT Act - Introduction E-Commerce and legal provisions E- Governance and legal provisions Digital signature and Electronic Signature,Cybercrimes.

### Recommended Readings

1. Intellectual Property Rights and the Law, Gogia Law Agency, by Dr. G.B. Reddy
2. Law relating to Intellectual Property, Universal Law Publishing Co, by Dr. B.L.Wadehra
3. IPR by P. Narayanan
4. Law of Intellectual Property, Asian Law House, Dr.S.R. Myneni.



## VIKRAMASIMHAPURIUNIVERSITY::NELLORE DEPARTMENT OF SOCIAL WORK

Syllabus for Master of Social Work (2 Year Course) for V.S. University Constituent College(s) and Affiliated Colleges under the jurisdiction of Vikrama Simhapuri University, Nellore with effect from the Academic Year 2022 –2023

### SEMESTER I

PROGRAMME	MASTER OF SOCIAL WORK (MSW)	SEMESTER	I
COURSE CODE & TITLE	101MSW22: WORK WITH INDIVIDUALS(Core Mandatory)		
NUMBER OF CREDITS	4	NUMBER OF HOURS	60
COURSE OBJECTIVES	<ol style="list-style-type: none"> <li>1. Understanding case work as a method of social work and its role in social work practice</li> <li>2. To develop knowledge regarding approaches to Case Work Practice</li> <li>3. To have acquaintance with use of case work in different settings</li> <li>4. To Understand the significance of assessment in Case Work</li> <li>5. To develop skills in recording and measuring the effectiveness of the social case work</li> </ol>		
UNIT	CONTENT		NO. OF HOURS
I	<b>Understanding Case Work as a method of SW:</b> a. Definition of Social case work, its scope in social work practice philosophical assumptions and values underlying case work practice. b. Case work process – Fact Finding Assessment, Intervention and Termination c. Principles of case work d. Techniques and skills of case work: Communication collecting information ; Need assessment; Establishing relationship; Partializing the problem for work; Establishing Contract for work ; Planning & Conducting home visits e. Interviewing – Importance and skills in Interviewing. Focusing and Directing in Interviewing		2  2  3  3  2
II	<b>Approaches to CW Practice:</b> a. Psycho – Social Approach b. Problem – Solving Approach c. Crisis Intervention d. Eclectic Approach e. Empowering Approach f. Strengths Based Approach		2 2 2 2 2 2
III	<b>Use of case work in different settings</b> a. The Multi Disciplinary approach in professional practice		3

IV	<b>Assessment in Case Work:</b> a. Why & What of assessment, (Need & Importance of Assessment) areas of assessment ; b. Assessment tools in Case Work – Genogram, Eco Map and Support Network Map. C. Case Presentation ( using examples from field work)	4 4 4
V	<b>Social Case Recording:</b> a. Need for Recording, Main Considerations in Recording, and Essential Qualities of a good record. b. Types of Recording – Discussions of select case records. c. Writing a case work record- process d. Measurement of effectiveness of Social Case work	3 3 3 3
<b>References:</b> 1. Hamilton, G.,(1956), Theory and Practice in Social Case Work, Columbia University Press, New York 2. Perlman, Helen Harris (2011)Social Case Work : A Problem Solving Process, Rawt Publications, Jaipur 3. Harris, F.J., 1970 Social Case Work, Nairobi : Oxford University Press 4. Richmond, M.E., (1972) What is Social Case Work : An Introduction Description, New York : Russel,Sage Publication 5. Upadyhyay R.K (2010), Social Case Work-A therapeutic Approach, Rawat Publication, New Delhi 6. Mathew Grace ( 1992), An Introduction to Social Case Work ,TISS, Bombay		
<b>Journals</b> ➤ Indian Journal of Social Work, Bombay, TISS. ➤ Perspectives of Social Work, Bombay, Nirmala Niketan.		



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**DEPARTMENT OF SOCIAL WORK**

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**SEMESTER II**

<b>PROGRAMME</b>	<b>MASTER OF SOCIAL WORK (MSW)</b>	<b>SEMESTER</b>	<b>II</b>
<b>COURSE CODE &amp; TITLE</b>	<b>201MSW22: WORK WITH COMMUNITIES (Core Mandatory)</b>		
<b>NUMBER OF CREDITS</b>	<b>4</b>	<b>NUMBER OF HOURS</b>	<b>60</b>
<b>COURSE OBJECTIVES</b>	1. To understand the concepts and components of community . 2. To gain knowledge about the models and approaches of community organization. 3. To practice community organisation and community development . 4. To enhance knowledge on Approaches to Community Organisation 5. To acquire skills and promote strategies for community participation		
<b>UNIT</b>	<b>CONTENT</b>	<b>NO. OF HOURS</b>	
		<b>S</b>	

I	<b>Concepts of Community:</b> a. Community: Concept, Definition, Meaning, components, characteristics; b. Major forms of community – Tribal, Rural, Urban	5 7
II	<b>Community Organisation and Social Work Practice:</b> a. Community Organisation: Concept, definition, scope; community organization in U.K., U.S.A. and India; b. Models of community organization: Rothmans Model, Neil Bract Model- strategies and trends. c. Principles of Community Organisation. Community Organisation and its relationship with other methods of social work.	4 4 4
III	<b>Practicing Community Organisation and Community Development</b> a. Practice of community organization: process and steps;	3
	b. Role and functions of community organizer; c. Role of NGO's: peoples' participation – concept, approaches, obstacles; d. Radical Community organization, resource mobilization and Micro-level planning e. Community Development: Concept, definition, objectives, historical trends; forms of community development	2 2 3 4
IV	<b>Approaches to Community organization</b> a. Institutional Building Approach b. Target group Approach c. Rights based Approach d. Skills of Community Organiser – Problem analysis, resource mobilization, Conflict Resolution, Organizing Meetings. e. Recording in Community Organization.	2 2 2 3 3
V	<b>Methods for Community Participation :</b> a. Participation – Concept and Definition ; People's / Community Participation – Need, Importance & Advantages; Obstacles to Peoples Participation. b. Application of PRA : Scope – Concerns. Different PRA methods – Classification ;Space-related: Social Map ; Resource Map, Time-related : Time Line; Trend Analysis and Seasonal Diagram .and Relation- related.: Venn diagram, Force Field Analysis, Livelihood Analysis c. Attributes and Roles of a Community Organization practitioner	2 2 2 4 2

#### REFERENCES

- Gittell, Ross, and Avis Vidal (1998) Community organizing: Building social capital as a development strategy. Sage publications
- Murphy, C.G., (1954), Community Organization, Prentice, Boston : Houghton Mifflin Co
- Ross Murray, G., (1954), Community Organization : Theory, Principles and Practices, New York : Harper and Row.
- Sengupta, P.R. (1976) , Community Organisation process in India, Kiran publishers, Lucknow
- Siddique, H.Y. (1997), Working with Communities, Hira Publications, New Delhi
- SomeshKumar (2002)Methods for Community Participation ; A complete guide for Practitioners ; Vistaar Publications ; New Delhi.

<b>PROGRAM ME</b>	<b>MASTER OF SOCIAL WORK (MSW)</b>	<b>SEMESTER</b>	<b>II</b>
<b>COURSE CODE &amp; TITLE</b>	<b>204MSW22A: SOCIAL ACTION AND SOCIAL LEGISLATION (Elective Foundation)</b>		
<b>NUMBER OF CREDITS</b>	<b>4</b>	<b>NUMBER OF HOURS</b>	<b>60</b>
<b>COURSE OBJECTIVES</b>	1. To Understand and gain knowledge of social action as a method of social work practice. 2. To Acquire knowledge on Social Movements and Social Action 3. To Understand and gain knowledge of Social Legislation as a method of social work practice. 4. To Social Problems and significance of Social legislation 5. To Enrich knowledge of Human Rights, Legal Aid and scope and role of social work in Social Legislation.		
<b>UNIT</b>	<b>CONTENT</b>	<b>NO. OF HOURS</b>	
<b>I</b>	<b>Understanding Social Action as a method of Social Work:</b>		
	a. Social Action : Definition, Concept and Scope; Process of Social Action – Steps and Strategies	3	
	b. Models of Social Action – Elitist and Popular; Principles and strategies of Social Action The need for an ideology as bases for social action	3	
	c. Social Action and other methods of Social Work-Relationship ; Role of the Social Worker in Social Action ; Social resources and their mobilization,	3	
	d. Networking , Advocacy and Lobbying : Need and Importance, : Role of social workers and agencies in the enforcements of Acts	3	
<b>II</b>	<b>Social Movements and Social Action:</b>		
	a. Social Movements in India : Gandhian Movement, Sarvodaya Movement ; Anti-Arrack Movement (AP); Chipko Movement , Anti- corruption : Lessons for Social Work practice	5	
	b. Protest and Dissent Movements : Dalit; Agrarian and peasant movements	4	
	c. Social action and social issues: Civil, women and child rights; Environmental and Ecological Issues.	3	
<b>III</b>	<b>Social Legislation and Social Work Practice Learning:</b>		
	a. Social Legislation – Concept and Definition - Knowledge & use of Social Legislation for Social Work Practice Learning	6	
	b. Right to information – Concept & Definition – Salient features of the Right to information Act – 2004	6	
<b>IV</b>	<b>Social Legislation and Social Problems:</b>		
	a. Legislation & Social Problems; The Dowry Prohibition Act (1961 amended 1986).Domestic violence Act 2005.	2	
	b. Juvenile Justice Act (2015); Prohibition of Child Labour Act 2016	2	
	c. The Protection of Children from Sexual Offences Act,2012	2	
	d. Legislations pertaining to Marriage : Hindu Marriage Act-1955; Muslim Marriage Act; Christian Marriage (1872)	2	
	e. Legislation and Succession : Hindu Succession Act 1956 –Latest	2	

	amendments; Succession under the Muslim law and Christian Law f. Hindu Adoption and Maintenance Act; Adoption and Maintenance under the Muslim and Christian Law, Indian Adoption Act; International Law of Adoption , Minority and Guardianship : Hindu, Muslim and the Christian Law	2
V	<b>Human Rights, Legal Aid and Social Work Practice:</b> a. Definition and important characteristics of Human Rights. Universal declaration of Human Rights (1948). The declaration on the Right to Development (1986) b. Constitutional and Legal Provisions to Protect human rights in India. The Protection of Human Rights Act (1993). c. National Human Rights Commission (NHRC) – Functions and Powers. Procedure related to Complaints & Inquiry ,State Human Rights Commission (SHRC) d. Legal Aid ; Concept and Definition ; Role and Functioning of State Legal Aid Boards. Public Interest Litigation – Meaning and Purpose - Process. Lokadalat	2 2 4 4

### REFERENCES

1. Gangrade. K.D.: Social legislation in India.
2. Planning commission: Social legislation in India.
3. Relevant Bare Arts : Delhi Law House 77 Gokhale Market , Delhi – 110054.
4. Baxi .V. 1982: The crisis of the Indian legal system, Vikas publishing .co., New Delhi.
5. Arjun Dev.: Human rights – A source Book.
6. Diwarn paras: Children and legal protection.
7. Jayapalan. N. Human rights, Atlantic publishers and distributors New Delhi.

PROGRAM ME	MASTER OF SOCIAL WORK (MSW)	SEMESTER	III
<b>COURSE CODE &amp; TITLE</b>	<b>303MSW22B: POPULATION AND ENVIRONMENTAL STUDIES(Generic Elective)</b>		
<b>NUMBER OF CREDITS</b>	<b>4</b>	<b>NUMBER OF HOURS</b>	<b>60</b>
<b>COURSE OBJECTIVES</b>	<ol style="list-style-type: none"> <li>1. To understand characteristics, determinants of population growth.</li> <li>2. To gain knowledge on population Education.</li> <li>3. To understand Environment &amp; diversity of Natural Resources.</li> <li>4. To examine Legislations Relating To Environment Protection</li> <li>5. To acquire and apply knowledge about environment Protection -Role of different Stake holders.</li> </ol>		
<b>UNIT</b>	<b>CONTENT</b>	<b>NO. OF HOURS</b>	
I	<b>Population and Demographic Situation :</b> a. Demographic Characteristics of population in India: Population, determinants of growth. b. Global concerns - Characteristics of Indian Population – Distribution by age, sex, literacy and occupation – Fertility trends - Birth and death ratio.	4 4 4	

	c. Population Policy, World Action Plan, Population Policy of India- Implementation; Initiatives – Government and NGO.	
II	<b>Population Education:</b> a. Concept and Scope of Population education, family life education, sex education, and family planning education. b. Family Planning: Objectives, scope, methods, implementation, mechanisms and progress. c. Population and Environment: Interrelatedness of human life, living organisms.	4 4 4
III	<b>Environment and Natural Resources:</b> a. Environment and natural resource – Environment, lifestyle, degradation. Environment management, maintaining, improving, enhancing – Current issues of Environment. b. Natural Resources and Diversity: Utilisation and management – Forest, land, water, air, energy sources - Pollution - Sources, treatment, prevention - Soil, water, air, noise - Waste matter - disposal, recycling, renewal, problems, issues - Programmes for forest, land and water management.	6 6
IV	<b>Legislations Relating To Environment Protection:</b> a. Environment Protection Laws and Role of Social Worker: Acts related to environmental protection b. Forest conservation- Water pollution – Standards and tolerance levels – Unplanned urbanization- Environmental movements in India	6 6
V	<b>Environment Protection -Role of different Stakeholds:</b> a. Role of NGOs in Environmental issues – Government agencies in environmental protection and water management – b. Social work initiatives at different levels.	6 6

#### REFERENCES

1. Cassen, R.H 1978, India Population, Economy and Society, London: Macmillan
2. Mohan, R. 1985, “Urbanization in India’s Future”, Population and Development Review, Vol. 11(4)
3. Family planning Association of India Family planning Counseling GuidePopulation Reports Service Series J.N 35 and 36
4. Prasad, R.K Population Planning, Policy and Programmes, New Delhi: Deep and Deep Publications
- 5.Reddy, Laxmi, M.V.1994, Population Education, New Delhi: Asish Publication
6. Seshadri and Pandey, J (Eds.) Population Education, A Natural Source 1991Book, New Delhi:
- 7.Satapathy, N. 1998 Sustainable Development (An Alternative Paradigm), Ahmedabad: Karnavati NCERTPublications.



<b>PROGRAMME</b>	<b>MASTER OF SOCIAL WORK (MSW)</b>	<b>SEMESTER</b>	<b>II</b>
<b>COURSE CODE &amp; TITLE</b>	<b>204MSW22B-ENVIRONMENTAL SOCIAL WORK (Elective Foundation)</b>		
<b>NUMBER OF CREDITS</b>	<b>4</b>	<b>NUMBER OF HOURS</b>	<b>60</b>
<b>COURSE OBJECTIVES</b>	<b>Course Objectives</b> <ol style="list-style-type: none"> <li>1. To understand the key concepts of Environment</li> <li>2. Acquire knowledge on different Environmental Resources</li> <li>3. To understand and acquire the knowledge Ecological Movements</li> <li>4. Develop an understanding of the Environment Protection Laws</li> <li>5. To Understand the Environmental issues and role of the Government and Non-government organizations</li> </ol>		
<b>UNIT</b>	<b>CONTENT</b>		<b>NO. OF HOURS</b>
<b>I</b>	<b>Introduction to Environment and Environmental Studies</b> <ol style="list-style-type: none"> <li>a. Definition and Components of Environment.</li> <li>b. Relationship between the different components of Environment.</li> <li>c. Man and Environment relationship, Impact of technology on Environment, Environmental Degradation.</li> <li>d. Multidisciplinary nature of the Environment studies, its scope and importance in the present day Education System.</li> </ol>		 3 3 3 3
<b>II</b>	<b>Environmental Resources</b> <ol style="list-style-type: none"> <li>a. Renewable and non-renewable resources.</li> <li>b. Natural resources and associated problems.</li> <li>c. Forest resources.</li> <li>d. Water resources.</li> <li>e. Mineral resources.</li> <li>f. Food resources.</li> <li>g. Energy resources.</li> <li>h. Land resources.</li> <li>i. Misused of environment Resources and it impact on community.</li> </ol>		 2 2 1 1 1 1 1 1 1 2
<b>III</b>	<b>Environment Consciousness- NGOs, Social Workers and Ecological Movements:</b> <ol style="list-style-type: none"> <li>a. Global level, People's initiatives to save their environment.</li> <li>b. Chipko Movement.</li> <li>c. Save forests movement.</li> <li>d. Tehri - Eco farming- Natural farming efforts.</li> </ol>		 3 2 2 2
<b>IV</b>	<b>Environment Protection Laws and Role of Social Worker</b> <ol style="list-style-type: none"> <li>a. The Environment Protection Act 1986</li> <li>b. Air Pollution Act 1987</li> <li>c. Water Pollution Act 1974</li> <li>d. Power and functions of Central and State Pollution Control Boards</li> </ol>		 2 2 2 3 3
<b>V</b>	<b>Acts related to environmental protection</b> <ol style="list-style-type: none"> <li>a. Forest conservation, Standards and tolerance levels</li> <li>b. Unplanned urbanization- Environmental movements in India</li> <li>c. Role of NGOs in Environmental issues</li> <li>d. Government agencies in environmental protection – Social work</li> </ol>		 3 3 3 3

	Initiatives at different levels.	3
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### **2PGPEL22: Personality Enhancement & Leadership**

<b>Semester</b>	<b>Course Code</b>	<b>Course Title</b>	<b>Hours/Week</b>	<b>Hours</b>	<b>Credits</b>
II	2PGPEL22	<b>PERSONALITY ENHANCEMENT &amp; LEADERSHIP</b>	4	60	4

#### **UNIT-I:INTRODUCTIONTOPERSONALITY ENHANCEMENT**

**15hr**

The concept personality Dimensions of theories of Freud & Erickson- personality - significant of personality development. The concept of success and failure: What is success? - Hurdles in achieving success - Overcoming hurdles - Factors responsible for success - What is failure - Causes of failure. SWOT analyses.

#### **UNIT-II:ATTITUDE&MOTIVATION**

**15hr**

Attitude - Concept - Significance - Factors affecting attitudes - Positive attitude - Advantages - Negative attitude - Disadvantages - Ways to develop positive attitude - Difference between personalities having positive and negative attitude. Concept of motivation - Significance- Internal and external motives - Importance of self-motivation- Factors leading to de-motivation.

#### **UNIT-III: SELF-ESTEEM**

**15hr**

Term self-esteem - Symptoms - Advantages - Do's and Don'ts to develop positive self-esteem - Low self-esteem - Symptoms - Personality having low self-esteem - Positive and negative self- esteem. Interpersonal Relationships - Defining the difference between aggressive, submissiveand assertive behaviours - Lateral thinking.

#### **UNIT-IV:INTRODUCTIONTO LEADERSHIP**

**15hr**

Definition and meaning, Importance, Leadership and Management, Leader vs Manager, Essential qualities of an effective leader. Theories of Leadership: Trait theory, Behavioral theories, Contingency theory.

## **UNIT-V: LEADERSHIP CHARACTERISTICS**

**15hr**

Types of Leaders - Importance of Leadership - Leadership Skills - Building and Leading Efficient Teams - Leadership styles: Traditional, Transactional, Transformational, Inspirational and servant leadership and Emerging issues in leadership: Emotional Intelligence and leadership, Trust as a factor, Gender and Leadership. Leadership Qualities of Abraham Lincoln, Mahatma Gandhi, Prakasam Pantulu, Dr. B.R. Ambedkar and J.R.D. Tata.

### **References:**

1. Hang, Soto, Christopher, Billy, expectations and abilities to meet them as possible mechanisms of youth personality development.
2. Rothbart, Ahadi, Evans (2000) Temperament and personality: Origins and Outcomes.
3. Roberts, Caspi, Moffitt (2001), Growth and stability in personality development from Adolescence to Adulthood.
4. Bass (1985), Leadership and performance beyond expectations, New York, Free Press.
5. Avery (2005), Understanding Leadership, London, Sage Publications.

## **ZOO-205: PERSONALITY ENHANCEMENT & LEADERSHIP**

### **UNIT-I**

**INTRODUCTION TO PERSONALITY ENHANCEMENT** - The concept personality- Dimensions of theories of Freud & Erickson- Personality — significance of personality development. The concept of success and failure: What is success? - Hurdles in achieving success - Overcoming hurdles - Factors responsible for success — What is failure - Causes of failure. SWOT analysis.

### **UNIT – II**

**ATTITUDE & MOTIVATION** - Attitude - Concept - Significance - Factors affecting attitudes - Positive attitude - Advantages Negative attitude - Disadvantages - Ways to develop positive attitude - Difference between personalities having positive and negative attitude. Concept of motivation - Significance - Internal and external motives - Importance of self motivation- Factors leading to de-motivation.

### **UNIT –III**

**SELF-ESTEEM** - Term self-esteem - Symptoms - Advantages - Do's and Don'ts to develop positive self-esteem— Low self esteem - Symptoms - Personality having low self esteem - Positive and negative self-esteem. Interpersonal Relationships— Defining the difference between aggressive, submissive and assertive behaviours - Lateral thinking.

### **UNIT –IV**

**INTRODUCTION TO LEADERSHIP** - Definition and meaning, Importance, Leadership and Management, Leader vs Manager, Essential qualities of an effective leader. Theories of Leadership:

Trait theory, Behavioural theories, Contingency theory.

## UNIT-V

**LEADERSHIP CHARACTERISTICS** - Types of Leaders Importance of Leadership — Leadership Skills — Building and Leading Efficient Teams Leadership styles: Traditional, Transactional, Transformational, Inspirational and servant leadership and Emerging issues in leadership: Emotional Intelligence and leadership, Trust as a factor, Gender and Leadership. Leadership Qualities of Abraham Lincoln, Mahatma Gandhi, Prakasam Pantulu, Dr. B.R. Ambedkar and J.R.D. Tata.

### References:

1. Girish Batra, Experiments in Leadership, Chennai: Notion Press, 2018.
2. Mitesh Khatri, Awaken the Leader in You. Mumbai: Jaico Publishing House, 2013.
3. Carnegie Dale. Become an Effective Leader. New Delhi: Amaryllis, 2012
4. Hall, C.S., Lindzey, C. & Campbell, J.B Theories of Personality. John Wiley & Sons, 5. 1998.
5. Organizational Behaviour, M. Parikh and R. Gupta, Tata-McGraw-Hill Education Private Limited.
6. Organizational Behaviour, D. Nelson, I.C Quick and P. Khandelwal, Cengage Publication.

## ZOO 301: ENVIRONMENTAL BIOLOGY

### Course Objectives:

While studying the **Environmental Biology**, the student shall be able to:

1. The objectives of the course are to develop the ability to solve the problems related to the environment, to make them aware of various eco-friendly techniques and modern techniques to solve various environment-related problems.
2. The objective of this course is to make awareness among the young students about the surrounding environment, the impact of climate change and its mitigation and biodiversity.
3. The aim of the contents of this course is to introduce and explain about various conservation issues of the ecosystem and animals.
4. Man himself is a part of ecosystem. The ecosystems in the world are continuously under the pressure of anthropogenic activities and human mediated ecological changes. Several animal species are under the survival threats. To introduce the students about wildlife and wild habitats, about depleting wild life and human wildlife conflict.
5. Generate an interest in Ethology in order to understand the complexities of both animal and human behavior.
6. To understand the basic theories and Principles of Ecology.
7. To learn about current environmental issues based on Ecological principles.
8. To study Environmental pollution and their management.

### UNIT-I:

- .Environment: Definition, Types of environment. General account of biomes and Types of Ecosystem.
- .Fresh Water Ecosystem - Classification and characteristics and stratification of the ecosystem.
- .Marine Water Ecosystem - Classification and characteristics and stratification of the ecosystem.
- .Terrestrial Ecosystem; Forest Ecosystem- Classification and characteristics and stratification of the ecosystem.

### UNIT II:

- .Energetic of Ecosystem: Tropic dynamic view of ecosystem.
- .Energy flow – Primary productivity and Secondary productivity. Factors influencing productivity.
- .Energy Budget: Estimation of Energy Budget and Methods of measuring productivity for different Ecosystems – harvesting method, CO<sub>2</sub> assimilation method, oxygen production method, chlorophyll method.
- .Bioaccumulation and Biomagnification.

### **UNIT-III:**

Air Pollution: Health hazards and Toxicology – Related episodes in India and Abroad.

Water Pollution: Health hazards and toxicology – Related episodes in India and Abroad.

Epidemiology: Role of Environmental epidemiological studies and Health indices in evaluation of environmental health hazards: Environmental epidemiological episodes in India and Abroad.

Environmental Laws in India – legislation and Execution.

### **UNIT IV:**

Bio indicators and environmental monitoring.

Environmental Impact Assessment (EIA): Methods for EIA assessment, Socio-economic effects and impacts.

Bioremediation: Need and Scope of bioremediation. Environmental applications of bioremediation.

Phytoremediation: Biotechnological cleaning up of the environment by plants.

### **Course Outcomes:**

1. The student will get idea about the ecological process in its surrounding and at National and Global level and the use of student knowledge on Ecology, Behaviour can be applied to Education, Research and Extension programmes in his further career.
2. Students will be understanding the various features and aspects of population ecology, community ecology and ecosystem ecology. They might have the knowledge about environmental biology in details. They will acquire knowledge about various tools and techniques of field ecology.
3. Students will be able to apply the scientific method and quantitative techniques to describe, monitor and understand environmental systems.
4. Students will be able to use interdisciplinary approaches such as ecology, economics, ethics and policy to devise solutions to environmental problems.
5. Students will be able to be proficient in ecological field methods such as wildlife survey, biodiversity assessment, mathematical modeling and monitoring of ecological systems.
6. Students will be able to use technology, such as geographical information systems and computer programming, to assist in problem solving.
7. This paper will help in creating skilled personnel in the field of environment protection and research.
8. Demonstrated an understanding of Ecological relationships between organisms and their environment.

### **SUGGESTED READING MATERIAL**

- 1) Practical methods in Ecology & Environmental Science, R K. Trivedy, Goel, Trisal, 1997.
- 2) Environmental Physiology of desert organism. Ed. by N.F. Hadley-Dowden Huchinson and Ross, Inc. Penn. USA.
- 3) The Ecology of wastewater treatment - H. A. Hawkes pergoman press, 1963.
- 4) Biochemical ecology and water pollution - PRDugan, plenum press, London, 1972.
- 5) Pesticides in the environment – R. White Stevanns, Marcel Dekker Inc. New York, 1971.
- 6) Environmental Science Research Volu mes: Vol.1. Indicators of environmental quality - WA. Thomas, 1972. Vol. 3. Environmental pollution by pesticides - C. A. Edwards, 1974. Vol. 5. Environmental dynamics of pesticides - R. Hague and V. H. Preed, 1975.
- 7) Ecology & Environment - P. D. Sharma, 1991.
- 8) Field Biology & Ecology - Allen H Benton & E. Werner, J R, 1980.
- 9) Encyclopedia of environmental pollution and control, enviromedia, Karad , Vol. 1 & 2, R. K Trivedi.
- 10) Ecotechnology for pollution control and environmental management, enviromedia, Karad, R K. Trivedi.
- 11) Health hazards and human environment, World Health Organization (WHO) 1972.
- 12) Current pollution research in India - R K. Trivedy and P.K. Goel. Karad.
- 13) Environmental Biology and Toxicology -P. D. Sharma, Rastogi Publications, Meerut (India), 1998.
- 14) Biodegradation & Bioremediation - 2<sup>nd</sup> editon, Martein Alexander - AcademicPress, 1999, USA.
- 15) A.k Pandey – Taxonomy and Biodiversity.

**SEMESTER – IV (EXTERNAL ELECTIVES – B)**  
**ZOO 403 (A): WILD LIFE CONSERVATION BIOLOGY**

**Course Objectives:**

- The course is an introduction to wildlife management and gives an account of the tools used by wildlife managers.
- Topics covered are to equip students with adequate knowledge of various biodiversity monitoring methodologies, conservation and management issues of vertebrate pests,
- To enhance the knowledge of wildlife conflict and over abundant species, wildlife health and diseases.

**UNIT I: Wildlife Biology**

Wildlife: Basic concepts and principles of wildlife, Importance and Values of wildlife; Wildlife heritage of India, Reasons for wildlife depletion in Indian context.

Concept of threatened fauna – IUCN categories of species; Distribution of wildlife in India.

1.3. Human and animal Conflicts: Basic concepts, reasons for conflicts, Identification of damages caused by wild animals and control measures, Socio-economic issues related to human – wildlife interactions.

1.4. Animal Relationships: Mutualism; Commensalisms; Parasitism; Ammensalism; Predation and Competition with relevant examples.

**UNIT II: Wildlife Conservation Biology**

Conservation of wildlife – Types of Conservation; Case studies – Wildlife sanctuary, National parks, Zoological parks, Biosphere reserves, Tiger reserves etc.

Government and Non-government organizations and their role; Important NGO movements – Chipko movement, Narmada Bachavo Andolan, seed movement, Pani panchayat).

Wildlife protection Acts; Wildlife management before and after implementation of Wildlife (Protection) Act, 1972.

Projects undertaken for protection of wildlife: Project Tiger, Project Lion, Project Crocodile, Project elephant etc. Translocation of wild animals – Principles, methods and application.

**UNIT III: Field Biology**

Vegetative analyses – Quadrat method, Point centered quadrat, Strip transect; Habitat manipulation: Food, Water, Shade, impact and removal of invasive alien species

Basic survey techniques of Habitats: Map reading, Google map, satellite images (types of forests, hilly areas, Valleys, boundaries, drainages, buildings, roads etc.)

Population Estimation: Basic concepts and applications - Direct count (block count; transect methods, Point counts, visual encounter survey, waterhole survey).

Indirect count (Call count, track and signs, pellet count, pugmark, nests, camera trap, DNA finger printing and aerial photography).

**UNIT IV: Application of Information Technology in Wildlife**

Audio records: Various audio recording techniques, sonogram evaluation, Applications of audio recordings (Bird songs, insect calls, habitat usage by bats etc.)

Use and application of GPS (Global Positioning System) – Way points, tracks etc.

4.3. Use and applications of GIS (Geographic Information System) software's.

4.4. Use and applications of Remote Sensing in wildlife conservation – Satellite imageries and false color imaging.

### **Course Outcomes**

On successful completion of this course students will be able to .

- 1.Understand the Importance and Values of wild life,Concept of threatened Fauna
- 2.Gain the Knowledge about the wild life conservation biology
- 3.Evaluate the Knowledge of Field Biology.
- 4.Applying the knowledge of information technology in wild life

### **SUGGESTED READING MATERIAL**

- 1) Giles, R.H. Jr. (Ed) 1984. Wildlife Management Techniques 3rd edition. The wildlife Society, Washington. D.C. Nataraj Publishers, Dehradun. India
- 2) Dasmann, Rf. 1964, Wildlife Biology. John and Wiley and sons New York. Pp231.
- 3) Rodgers, W.A 1991. Techniques for Wildlife census in India – A Field manual technical Manual – Wildlife Institute of India, Dehradun.
- 4) Saharia, V.B. 1982 Wildlife in India, Nataraj Publishers, Dehra Dun
- 5) Seshadri, B.1986 India's Wildlife reserves, Sterling Publishers Pvt. Ltd., New Delhi
- 6) Giles, R.H. Jr. (Ed) 1984. Wildlife Management Techniques 3rd edition. The wildlife Society, Washington. D.C. Nataraj Publishers, Dehradun. India
- 7) Dasmann, Rf. 1964, Wildlife Biology. John and Wiley and sons New York. Pp231.
- 8) Robinson, Wl. and Eric, G. Bolen, 1984. Wildlife Ecology and Management Mac Millan Publishing Co,Ny.Pp478.
- 9) Rodgers, W.A 1991. Techniques for Wildlife census in India – A Field manual technical Manual – Wildlife Institute of India, Dehra Dun.
- 10) Sukumar. R. 1989. Ecology and management of Asian elephants. Oxford University Press.

## **Zoo-406(A)AQUATIC RESOURCES & CONSERVATION**

### **Aquatic Resources and conservation**

#### **Course objectives**

1. To Understand about the different components and of aquatic environment
2. To know about the types and Structure of aquatic eco systems
3. To understand about Fresh water, brackish water and marine water resources
4. To understand about sustainable management of water resources
5. To know about the aquatic pollutants and control of water pollution

#### **Unit-1**

General concepts in hydrology-Components of Aquatic Environment –Aquatic Ecosystem  
Biodiversity Different aquatic sources on earth –Fresh water,brackish water and Marine water –  
Management of Inland Aquatic Ecosystem -Types and structure of aquatic ecosystems.  
Abiotic and biotic factors. Management and Conservation of aquatic ecosystems for sustainable uses.

#### **Unit-2**

Physico-chemical characteristics of freshwater. Classification and thermal stratification of fresh water bodies.

Freshwater adaptation- Major river systems of India- Measures to increase their production and economic management of reservoirs.

Physico-chemical characteristics of estuarine water - Origin, types & characteristics of estuaries.  
Major estuaries of India-Management of Indian estuary

### **Unit-3**

Classification and thermal stratification of marine environment.

Conservation and management of marine environment- geological, physical, chemical, biological and ocean graphical analysis of Indian Ocean.

Zonation of ocean. Ocean currents, waves and tides. –

Sustainable management of Indian Ocean.

### **Unit-4**

Common transport process of pollutants in the aquatic environment.

Eutrophication and their impact on aquaculture. Algal blooms. EIA and its impact on aquaculture.

4.3 Treatment methods of waste water- Principles of aeration, chlorination, ozonation and U.V. radiation.

4.4. Prevention and control of different aquatic pollution. Role of central and state government in pollution control.

### **Course Out comes**

1. Demonstrate the Knowledge of Concepts in Hydrology, Structure, management and Conservation of Aquatic Ecosystem
2. Classify the Aquatic Resources and understand the management of Aquatic Resources
3. Assess the effect of pollution on the aquatic environment.
4. Determine the ways of treatment methods of waste water
5. Evaluate the role of central and state government in pollution control.

### **References**

1. Grigg Nell's (1985): "Water Resources Planning", McGraw Hill Book company, Washington.  
Integrated Water Resources Management by Sarbhukan M M , CBS PUBLICATION
- Mishra R.P. & A. Ramesh (1984): "Resource Geography", Heritage Publisher, New Delhi.
2. Sharma V.K. (1989): "Water Resources & Water management", Himalaya Publishing Bombay.
3. Water Resource and Environmental Sustainability by Sarda Ganguly Gangadhar Banerjee, VIVA BOOKS PRIVATE LIMITED
4. The Biology of Estuarine Management by James G. Wilson
5. Waste water Treatment –Concepts and Design Approach by G.L Karia and R.K Christian



## **ZOO-406(B) MEDICAL BIOTECHNOLOGY, IPR, BIO-SAFETY AND BIO-ETHICS**

### **Course objectives:**

While studying the **Medical Biotechnology, IPR, Bio-safety and Bio-ethics** course, the student shall be able to:

1. Study the types of Gene therapy and its uses in Medical Biotechnology
2. This course is designed to develop the knowledge on PCR, Immunological assays, cloning and animal cell culture techniques.
3. To study the fertilization, organogenesis, potency and differentiation, Morphogenesis in the developmental biology.
4. To gain knowledge on bacterial, plant and animal viruses.
5. This course helps to adhere to the ethical practices appropriate to the discipline at all times.
6. Adopt to the safe working practices, relevant to the bioindustries and research field.

### **UNIT-1.**

**1.1.Disease diagnosis-probe:** PCR,LCR immunological assay. Detection of genetic, Neurogenetic disorders involving Metabolic and Movement disorders. Treatment products from recombinant and non- recombinant organisms  
Interferons, Antisense therapy, cell penetrating peptides, Gene therapy,  
Types of gene therapy, somatic virus germline gene therapy, mechanism of gene therapy, Immunotherapy, Detection of mutations in neoplastic diseases MCC, SSCP, DGGE, PTTC.

### **UNIT-2.**

**2.1.Animal Biotechnology:** Development Biology; fertilization and organogenesis

2.2 .Stem cells; potency and differentiation, different signaling for development,  
Morphogenesis in different model systems  
Cloning; Transgenic and knockout systems. Animal cell Culture methods.

### **UNIT-3.**

**Virology:** Classification and modes of propagation; bacterial, plant and animal viruses: morphology and ultrastructure; assay of viral particles, cell culture;viral enzymes, nucleic acids

DNA viruses: Herpes, Hepatitis B, Adeno virus; RNA viruses: Polio, VSV, Influenza, Retroviruses: Structure, life cycle, transformation; TMV, Baculoviruses,; Response to viral infections: slow and persistent infections, Antiviral agents, Interferons.

Economics, Biosafety. Patent rights and Special Topics Biotechnology R & D and industry: Business aspects of biotechnology, research and market place, Finance and human resources: Intellectual property right: patents, R & D partnership, license agreement and joint venture.

## **UNIT-4.**

Innovation Management: Technology transfer tools, Industry-Academia collaborations, Bio-incubators

Bio-accelerators, Finishing school; Bioethics: Role of bioethics in research. Prevention and management of plagiarism, fabrication/manipulation of data, conflict of interest, socio-cultural and behavioral conflicts during the conduct of research.

Authorship & patenting/commercial rights and conflicts. Bioethical norms governing research related to animals and humans.

**Biosafety:** Prevention and management of chemical and biological hazards associated with research. Evaluation and interpretation of data sheets, labels etc. for pre-assessment of biological and chemical hazard.

### **Course Outcomes:**

1. Student comes familiar with the Application of Biotechnological techniques in control of neurogenetic diseases and neoplastic diseases.
2. Students will gain awareness about Intellectual Property Rights (IPR) to take measures for protecting their ideas.
3. Gains knowledge on the Developmental stages of organism in Animal Biotechnology.
4. They will be able to devise business strategies by taking account of IPRs.
5. Students will develop awareness about bioethics and biosafety, Authorship and patenting/ commercial rights and conflicts.
6. Students will develop the knowledge on bacterial, plant and animal viruses.

### **SUGGESTED READING MATERIAL:**

1. Sasson A, Biotechnologies and Development, UNESCO Publications, 1988.
2. Mike Martin and Roland Schinzinger, "Ethics in Engineering", Mc Graw-Hill, Newyork, 1996.
3. Sasson A. Biotechnologies in developing Countries present and future, UNESCO Publishers, 1993.
4. Biosafety: Principles and Practices (Biological safety: Principles and Practices) by Diane O., Ph.D. Fleming and Dbra Long Hunt (Aug 30, 2006).
5. S.F. Gillbert, Developmental Biology, Sinauer Associates Inc., Massachusetts
6. Schatten and Schatten. Molecular Biology of Fertilization.
7. Bioethics and Biosafety in Biotechnology, Sree Krishna.V. (2007), New Age International Publishers.

## **CHE103b:ENVIRONMENTALCHEMISTRY**

<b>Semester</b>	<b>Course Code</b>	<b>CourseTitle</b>	<b>Hours/Week</b>	<b>Hours</b>	<b>Credits</b>
I	<b>CHE103b</b>	<b>ENVIRONMENTAL CHEMISTRY</b>	4	60	4

### **UNIT- I:ATMOSPHERIC CHEMISTRY**

**15hr**

Chemical reactions in the atmosphere – Aerosol types, production and distribution– Aerosols and radiation – Atmospheric turbidity and related environmental problems - Inversions – Global climate and photochemical reactions – Globalwarming – Greenhouse effect –Ozone depletion– Acid rain – Corrosion mechanism – Prevention – Particles in Atmosphere –Composition sources, Types and effects.

### **UNIT-II: TOXICOLOGICAL CHEMISTRY**

**15hr**

Introduction to toxicology and toxicological Chemistry – Toxicants – Dose Response Relationships – Biochemical aspects of As, Cd, Pb, Hg, Co, PAN, CO, Pesticides, MIC and carcinogens in air. Chemistry of Ozone layer, Light absorption and principles of photo chemistry, Catalytic and non-catalytic destruction of ozone, Ozone depleting substances, Biological consequences of ozone depletion.

### **UNIT-III:SOILCHEMISTRY**

**15hr**

Soil formation and development, Morphology - Texture, structure physico and chemical properties of soil. Micro and Macronutrients – Inorganic and Organic contaminants in the soil – Biodegradation – Nondegradable waste and its effect on the environment –Bioremediation of surface soils.

### **UNIT- IV:WATERCHEMISTRY**

**15hr**

Water pollutants – Types – Sources – Heavy metals – Metalloids – Organic, Inorganic, Biological and Radioactive – Types of reactions in various water bodies including marine environment – Eutrophication – Ground water – Potable water.

**References:**

1. Sharma, B.K.KaurH.,EnvironmentalChemistry,GoelPublishingHouse(1995).
2. TyagiO.D.andMehraM,TextBookofEnvironmentalChemistry,AnmolPublications (1990).
3. JohnsonD.O.,NettervilleJ.T.,WoodJ.C.andJamesM,ChemistryandtheEnvironment , W.B.Saunders Company Philadelphia (1972).
4. BaileyR.A.,ClerkeH.M.,FerrisJ.P.,KrauseSandStrongR.L.,Chemistry of the Environment, Academic Press., New York (1978).
5. StanleyEManahan, EnvironmentalChemistry, LewisPublishers(2001).
6. ThomasGSpiroandWilliamMStigliani,ChemistryoftheEnvironment,PrenticeHallo f India (2004).
7. RashmiSanghiand SrivastavaM.M.,GreenChemistry,Narosa(2006).

**CHE203:b)ENVIRONMENTALPOLLUTION**

Semester	Course Code	CourseTitle	Hours/Week	Hours	Credits
I	CHE203b	ENVIRONMENTAL POLLUTION	4	60	4

**UNIT-I:ATMOSPHERICPOLLUTION****15hr**

Sampling and analysis of SO<sub>2</sub>, NO<sub>x</sub>, NO<sub>2</sub>, CO<sub>2</sub>, fluoride, hydrocarbons and particulates – Cryogenic sampling – Impinges – Scrubbers – Adsorption – Absorption for analysis of SO<sub>2</sub>, NO<sub>2</sub>, CO<sub>2</sub>, fluoride and hydrocarbons – Automobile emissions – Types and their control methods, Impact of automobile technology and fuels, National and Euro standards.

**UNIT-II: WATER POLLUTION****15hr**

Sampling, analysis and prevention – Determination of pH, DO, BOD, COD, Solids, colour, turbidity, various forms nitrogen, phosphates, fluorides, sulphates, hardness, heavy metals, oil and grease, phenols, pesticides and radio nuclides.

**UNIT-III:SOILPOLLUTION****15hr**

Sources of Soil pollution – Industrial wastes, pesticides, fertilizers and manures, discarded wastes, radioactive and other pollutants. Salination of soil, Control of soil pollution. Sampling, analysis and prevention – Determination of pH – Marine Pollution: Marine – Material addition –

Natural and Anthropogenic activity – Oil pollution and effects on marine organisms – Control methods.

**UNIT– IV: NOISE POLLUTION**

**15hr**

Introduction of noise pollution, transmission of sound, measurement of sound, Sources – Noise indices – Classification of Noise loads –Effect of noise pollution – Effect on hearing ability, Effect on general health and other effects, Effect of noise on biota and human health – Control and prevention methods. Noise pollution control in India.

**References:**

1. HenryCPerkins, AirPollution,McGraw-Hill(1974).
2. ChhatwalG.R, MehraM.O., KatyalT, SatakeKMohan  
KatyalandNagahiro T, Environmental Noise Pollution and its  
Control, Anmol Publications (1989).
3. Trivedy R.K. and Goel P.K., An Introduction to Air Pollution, Techno Science  
Publications, Jaipur (1995).
4. KudesiaV.P.,WaterPollution,PragatiPrakashanPublications(1985).
5. SharmaP.D.,EnvironmentalBiology,RastogiandCo (1995).
6. Harrison, R.M.,Pollution–Causes,EffectsandControl,RoyalSocietyofChemistry(1990).
7. HandbookofNanofabrication.Edited byGaryWiederrcht.Elsevier,2010.
8. Introduction to Nanoscience by Gabor L. Hornyak, Joydeep Dutta, Harry F.  
Tibbals, Anil K. Rao. CRC Press, 2008.

**CHELS209:PERSONALITYENHANCEMENT&LEADERSHIP (LIFE SKILL**

**COURSE- II)**

Semester	CourseCode	CourseTitle	Hours/Week	Hours	Credits
II	CHELS209	<b>PERSONALITY ENHANCEMENT &amp; LEADERSHIP</b>	4	60	4

## **UNIT-I:INTRODUCTIONTOPERSONALITY ENHANCEMENT**

The concept personality Dimensions of theoriesof Freud & Erickson- personality - significant of personality development. The concept of success and failure: What is success? - Hurdles in achieving success - Overcoming hurdles - Factors responsible for success - What is failure - Causes of failure. SWOT analyses.

## **UNIT-II:ATTITUDE&MOTIVATION**

Attitude - Concept - Significance - Factors affecting attitudes - Positive attitude - Advantages - Negative attitude - Disadvantages - Ways to develop positive attitude - Difference between personalities having positive and negative attitude. Concept of motivation - Significance- Internal and external motives - Importance of self-motivation- Factors leading to de-motivation.

## **UNIT-III: SELF-ESTEEM**

Term self-esteem - Symptoms - Advantages - Do's and Don'ts to develop positive self-esteem - Low selfesteem - Symptoms - Personality having low selfesteem - Positive and negative self- esteem. Interpersonal Relationships - Defining the difference between aggressive, submissiveand assertive behaviours - Lateral thinking.

## **UNIT-IV:INTRODUCTIONTO LEADERSHIP**

Definitionandmeaning,Importance,LeadershipandManagement,LeadervsManager,Essential qualities of an effective leader. Theories of Leadership: Trait theory, Behavioral theories, Contingency theory.

## **UNIT-V:LEADERSHIPCHARACTERISTICS**

Types of Leaders - Importance of Leadership - Leadership Skills - Building

15hr

And Leading Efficient Teams - Leadership styles: Traditional, Transactional, Transformational, Inspirational and servant leadership and Emerging issues in leadership: Emotional Intelligence and leadership, Trust as a factor, Gender and Leadership. Leadership Qualities of Abraham Lincoln, Mahatma Gandhi, Prakasam Pantulu, Dr. B.R. Ambedkar and J.R.D. Tata.

15hr

**References:**

1. Hang, Soto, Christopher, Billy, expectations and abilities to meet them as possible mechanisms of youth personality development.
2. Rothbart, Ahadi, Evans (2000) Temperament and personality: Origins and Outcomes.
3. Roberts, Caspi, Moffitt (2001), Growth and stability in personality development from Adolescence to Adulthood.
4. Bass (1985), Leadership and performance beyond expectations, New York, Free Press.
5. Avery (2005), Understanding Leadership, London, Sage Publications.

### **CHEOC406:b)PRINCIPLESOFIPRANDPATENTLAWS**

<b>Semester</b>	<b>Course Code</b>	<b>CourseTitle</b>	<b>Hours/Week</b>	<b>Hours</b>	<b>Credits</b>
<b>IV</b>	<b>CHEOC406 b</b>	<b>PRINCIPLESOFIPR ANDPATENTLAWS</b>	<b>4</b>	<b>60</b>	<b>4</b>

#### **UNIT-I:INTRODUCTIONTOINTELLECTUALPROPERTY RIGHTS**

**15hr**

Concept and Theories, Kinds of Intellectual Property Rights, Economic analysis of Intellectual PropertyRights, Need for Private Rights versus Public Interests, Advantages and Disadvantages of IPR.

#### **UNIT-II:PATENTLAW**

**15hr**

Research exemption Introduction to Patents ,Overview, Concepts, Novelty, Utility Rights of patentee Procedure for granting a patent and obtaining patents Grounds for opposition, Working of Patents, Compulsory License Acquisition, Surrender, Revocation, Restoration, Transfer of patent rights.

#### **UNIT-III:COPYRIGHTLAW**

**15hr**

Concept and Principles, Historical background and Development of Copyright Law, Copyright Registrar and Copyright Board-Power and Procedure Copyright Societies, Ownership, Assignment, License, Translation of Copyright, Compulsory Licenses, Infringement-Criteria of Infringement, Infringement of Copyright-Films, Literary and Dramatic works, Importation and Infringement.

#### **UNIT-IV:EMERGINGISSUES ANDCHALLENGES**

**15hr**

Public health and Intellectual Property Rights, Case study -Novartis Pharmaceuticals, Bayer Pharmaceuticals, TraditionalknowledgeandIPR, Bio piracy, DomainNameDisputesandCyber squatting.



## References:

1. D.P.Mittal(TaxmanPublication),IndianPatentsLawand Procedure
2. P.Narayanan(EasternLawHouse),IntellectualPropertyLaw
3. N.S.Gopalakrishnan&T.G.Agitha,PrinciplesofIntellectualProperty (2009), Eastern BookCompany, Lucknow
4. Dr.B.L.Wadhera, LawRelatingtoPatent,Trademarks,Copyright&Designs
5. P.Narayanan(EasternLawHouse),IntellectualPropertyLaw
6. W.Cornish(UniversalPublication), IntellectualPropertyLaw
7. Merges,PatentLawandPolicy:CasesandMaterials, 1996
8. BrianC. Reid, APracticalGuidetoPatentLaw,2ndEdition, 1993

### CHEAC 406:a) APPLICATIONS OF ANALYTICAL CHEMISTRY IN ENVIRONMENTAL SCIENCE

Semester	Course Code	Course Title	Hours/Week	Hours	Credits
IV	CHEAC406a	APPLICATIONS OF ANALYTICAL CHEMISTRY IN ENVIRONMENTAL SCIENCE	4	60	4

#### UNIT -I : ENVIRONMENT AND ANALYTICAL CHEMISTRY

15 hr

Concept of Environmental Chemistry, Environment, Changes in Environment with time, Interference of man with Environment, Segments of Environment, Biochemical cycles in Environment, Concept of pollution, Natural and man made pollution, Role of Analytical Chemistry in Environmental studies, List of Analytical methods and principles.

#### UNIT – II: GREEN CHEMISTRY AND TOXICOLOGY

15 hr

(a) **Introduction to Green Chemistry:** Definition of Green Chemistry, Twelve Principles of Green Chemistry, Experimental systems. Historical approach, tools of green Chemistry, Catalysis and bio catalyses of Green Chemistry, examples of Green Chemistry, Pharmaceutical industry and Green Chemistry, Pesticides, Solvents, Green Chemistry, Sugar and distilleries, wastes and future trends in Green Chemistry.

(b) **Environmental Toxicological Chemistry:** Introduction to toxicological chemistry, dose response relationship, relative toxicities. Teratogenesis, mutagenesis, carcinogenesis, Immune system effects, Health hazards, Toxic elements and elemental forms, Toxic inorganic compounds, Toxicology of organic compounds, Effect of Toxic chemicals on enzymes,

biochemical effects of As, Cd, Hg and Oxides of Sulphur and nitrogen.

### **UNIT – III: AIR POLLUTION MONITORING METHODS & INSTRUMENTAL**

#### **TECHNIQUES**

**15 hr**

**(a) Air Pollution Monitoring Methods:** Analysis of gaseous pollutants –SO<sub>2</sub>, H<sub>2</sub>S, NO-NO<sub>x</sub>, NH<sub>3</sub>, CO, CO<sub>2</sub>, Ozone, organic gases and vapours. Continuous monitoring of air pollutants –

principles, monitoring instruments, monitoring of SO<sub>2</sub>, H<sub>2</sub>S, NO-NO<sub>x</sub>, CO, CO<sub>2</sub>, hydrocarbons, ozone, suspended particulate matter, chemical and photochemical reactions in atmospheres.

**(b) Instrumental Techniques in Environmental Chemical Analysis:** Basic Principles, Instrumentation, outlines of procedures and applications of the techniques - AAS and ICP AES, X-ray fluorescence spectrometry, Neutron activation analysis, Other radio analytical techniques.

### **UNIT – IV: INDUSTRIAL POLLUTANTS**

**1**

**5 hr**

#### **(a) Petrochemical Industry and Pollution Control Methods**

Introduction, Raw materials, Saturated hydrocarbons from natural gas, Uses of saturated hydrocarbons, Unsaturated hydrocarbons-Acetylene, Ethylene, Propylene, Butylenes. Aromatic hydrocarbons, Toluene, Xylene, Chemical processing of paraffin hydrocarbons, Chemical processing of ethylene hydrocarbons, Chemical processing of acetylene, Chemical processing of Aromatic hydrocarbons. Pollution control in petrochemical manufacture; water pollution control, air pollution control, solid waste disposal.

**(b) Sugar Industry, Paper and pulp industry, polymer drugs, radio nuclide analysis, disposal of waste and their management.**

#### **References**

1. Environmental Chemistry by Moore & Moore.
2. Environmental Chemistry by Mahanan, VI<sup>th</sup> Edition, Lewis Publications.
3. Environmental Chemistry by B.K.Sharma. Goel Publications.
4. Environmental Chemistry by Ohra & Thyogi.
5. Environmental Chemistry by Benargi.
6. Environmental Pollution and control in chemical process and industries by S.K.Bhatia.
7. Environmental Pollution by S.S.Dara.

**CHEAC 406: b) PRINCIPLES OF IPR AND PATENT LAWS**

<b>Semester</b>	<b>Course Code</b>	<b>Course Title</b>	<b>Hours/Week</b>	<b>Hours</b>	<b>Credits</b>
<b>IV</b>	<b>CHEAC 406 b</b>	<b>PRINCIPLES OF IPR AND PATENT LAWS</b>	4	60	4

**UNIT –I : INTRODUCTION TO INTELLECTUAL PROPERTY RIGHTS       15 hr**

Concept and Theories, Kinds of Intellectual Property Rights, Economic analysis of Intellectual Property Rights, Need for Private Rights versus Public Interests, Advantages and Disadvantages of IPR.

**UNIT –II: PATENT LAW**

**15 hr**

Research exemption Introduction to Patents ,Overview, Concepts, Novelty, Utility Rights of patentee Procedure for granting a patent and obtaining patents Grounds for opposition, Working of Patents, Compulsory License Acquisition, Surrender, Revocation, Restoration, Transfer of patent rights.

**UNIT –III: COPYRIGHT LAW**

**15 hr**

Concept and Principles, Historical background and Development of Copyright Law, Copyright Registrar and Copyright Board-Power and Procedure Copyright Societies, Ownership, Assignment, License, Translation of Copyright, Compulsory Licenses, Infringement-Criteria of Infringement, Infringement of Copyright-Films, Literary and Dramatic works, Importation and Infringement.

**UNIT –IV: EMERGING ISSUES AND CHALLENGES**

**15 hr**

Public health and Intellectual Property Rights, Case study -Novartis Pharmaceuticals, Bayer Pharmaceuticals, Traditional knowledge and IPR, Bio piracy, Domain Name Disputes and Cyber squatting.

## References:

1. D.P. Mittal (Taxman Publication), Indian Patents Law and Procedure
2. P. Narayanan (Eastern Law House), Intellectual Property Law
3. N.S. Gopalakrishnan & T.G. Agitha, Principles of Intellectual Property (2009), Eastern Book Company, Lucknow
4. Dr. B.L. Wadhwa, Law Relating to Patent, Trademarks, Copyright & Designs
5. P. Narayanan (Eastern Law House), Intellectual Property Law
6. W. Cornish (Universal Publication), Intellectual Property Law
7. Merges, Patent Law and Policy: Cases and Materials, 1996
8. Brian C. Reid, A Practical Guide to Patent Law, 2nd Edition, 1993

## **M.A. (Final) POLITICAL SCIENCE**

(Choice Based Credit System (CBCS) With effect from 2022-23 Batch)

### **SEMESTER-IV**

### **PS -404 (B): ENVIRONMENTAL POLITICS**

#### **Course Objectives:**

1. This course examines environmental politics from a comparative and international perspective. Following and introduction to the debates and concepts central to understanding environmental politics,
2. The course explores the key actors and dynamics shaping environmental policy and politics within and across states.
3. We'll pay particular attention to these actors: government institutions, parties, NGOs, business firms, experts and the media.

#### **Unit-I: The Concept of Environment**

- a) Man and Environment - Population and Environment
- b) Health and Environment - Need to Conserve and Protect Environment.

#### **Unit-II: Development and Environment**

- a) Industrialization and Pollution - Infrastructure Projects
- b) Agriculture and Sustainable Development -Degradation and Development

#### **Unit -III: Environmental Management**

- a) Environmental Protection - Laws on Environment
- b) Coastal Zone Rules - Wild Life Protection

#### **Unit-IV: Technology and Environment**

- a) Bio-Technology – Problems , Prospects and Ethics
- b) Technological Innovations Environment - Kyoto Protocol

#### **Unit-V: Peoples' Movements and Environment**

- a) Chipko Movement, Appiko Movement , Narmada Bachavo Movement
- b) Green Peace International Movement, Role of Political Parties and NGO's in Environmental Movements.

### **Suggested Readings:**

1. Rangrajan, M. (ed.) : *Environmental Issues in India: A Reader*,
2. Arvind Kumar : *A Text Book of Environmental Science*.
3. Anil Agarwal, Srabani Sen, & Sunita Narain : *Fifth Citizens' Report*.
4. L. Hunter Lovins : *Boyd Cohen 2011 Climate Capitalism: Capitalism in the Age of Climate Change*.
5. Sumi Krishna : *Environmental Politics: People's Lives and Development Choices*.
6. Vandana Shiva & Ingunn Moser (ed) : *Biopolitics: A Feminist and Ecological Reader on Biotechnology, 1995*
7. Shiva, Vandana : *Biodiversity Conservation: Who's Resource? Who's Knowledge?*
8. Renu Khator: *Environment, Development, and Politics in India*

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**M.A. (Final) PUBLIC ADMINISTRATION**  
Choice Based Credit System (CBCS) w.e.f. 2022-23 Batch  
**SEMESTER-III**

**PA- 307(B): ENVIRONMENTAL ADMINISTRATION**  
**(Open Elective Offered to Other Departments)**

#### **Course objectives:**

1. The objective of the course is to give overview to the students with regard to Environmental Administration - Meaning, Component, Eco-system, Problems, Environmental Pollution: Causes and Factors.
2. The course also seeks to familiarize the students with regard to critical & adverse impact of these reforms and emerging issues for the Environmental administration.

#### **Unit– I:**

- a) Environmental Administration - Meaning, Component, Eco-system
- b) Environmental Administration - Problems, Environmental Pollution: Causes and Factors.

#### **Unit–II:**

- a) Constitutional Provisions relating to Environmental Protection
- b) Environmental Policy in India

#### **Unit–III:**

- a) Environmental Laws and Planning in India.
- b) Environment and Ecology

#### **Unit–IV:**

- a) Air Quality Management, Pollution Control
- b) Role of Legislative and Administrative Machinery for ensuring Environment Protection Levels in India

## Unit–V:

- a) Environment Control Administrative Machinery at the National Level
- b) Environment Control Administrative Machinery at the State and District Level

## Suggested Readings:

1. Hoshiar Singh (ed) : *Environment Policy and Administration.*
2. Shekhar Singh (ed) : *Environmental Policy in India.*
3. India, NCEP : *Draft Report of the State of the Environment.*
4. O.P.Dwivedi, India : *Pollution Control Policy and Programmes.*
5. S.C. Bhatia (ed) : *Papers in Environmental Education.*
6. A.K. Sharma &  
A. Sharma (ed.) : *Impact of the Development of Science and Technology on Environment.*
7. Desh Bandhu : *Environmental Management.*
8. UNESCO : *Environmental Education in Asia and the Pacific.*
9. H.N.Tiwari : *Environmental Law.*

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## **BOT-207: PERSONALITY ENHANCEMENT & LEADERSHIP**

### **UNIT-I**

**INTRODUCTION TO PERSONALITY ENHANCEMENT-** The concept personality- Dimensions of theories of Freud & Erickson- Personality — significance of personality development. The concept of success and failure: What is success? - Hurdles in achieving success - Overcoming hurdles - Factors responsible for success — What is failure - Causes of failure. SWOT analysis.

### **UNIT – II**

**ATTITUDE & MOTIVATION-** Attitude - Concept - Significance - Factors affecting attitudes - Positive attitude - Advantages Negative attitude - Disadvantages - Ways to develop positive attitude - Difference between personalities having positive and negative attitude. Concept of motivation - Significance - Internal and external motives - Importance of self motivation- Factors leading to demotivation.

### **UNIT –III**

**SELF-ESTEEM-** Term self-esteem - Symptoms - Advantages - Do's and Don'ts to develop positive self-esteem— Low self esteem - Symptoms - Personality having low self esteem - Positive and negative self-esteem. Interpersonal Relationships— Defining the difference between aggressive, submissive and assertive behaviours- Lateral thinking.

## **UNIT –IV**

**INTRODUCTION TO LEADERSHIP-** Definition and meaning, Importance, Leadership and Management, Leader vs Manager, Essential qualities of an effective leader. Theories of Leadership: Trait theory, Behavioural theories, Contingency theory.

## **UNIT-V**

**LEADERSHIP CHARACTERISTICS-** Types of Leaders Importance of Leadership — Leadership Skills — Building and Leading Efficient Teams Leadership styles: Traditional, Transactional, Transformational, Inspirational and servant leadership and Emerging issues in leadership: Emotional Intelligence and leadership, Trust as a factor, Gender and Leadership. Leadership Qualities of Abraham Lincoln, Mahatma Gandhi, Prakasam Pantulu, Dr. B.R. Ambedkar and J.R.D. Tata.

### **References:**

1. GirishBatra, Experiments in Leadership, Chennai: Notion Press, 2018.
2. Mitesh Khatri, Awaken the Leader in You. Mumbai: Jaico Publishing House, 2013.
3. Carnegie Dale. Become an Effective Leader. New Delhi: Amaryllis, 2012
4. Hall. C.S., Lindzey. C. & Campbell, J.B Theories of Personality. John Wiley & Sons, 5. 1998.
5. Organizational Behaviour, M. Parikh and R. Gupta, Tata-McGraw-Hill Education Private Limited.
6. Organizational Behaviour, D. Nelson, I.C Quick and P. Khandelwal, Cengage Publication.

## **BOT – 303 (A): ETHNOBOTANY**

### **Unit – I**

Ethnobotany, its history, scope, importance and various sub disciplines; Methods and literature in ethnobotany; Recent ethnobotanical works in India; Main world centres and workers of ethnobotany; Different aspects related to tribes of Andhra Pradesh. Wild medicinal plants and their therapeutic values with reference to tribes of Eastern Ghats.

### **Unit – II**

Different systems of indigenous medicine; Ayurveda - Origin and understanding of Ayurveda; Siddha - Origin and understanding of Sidha; Unani - History and principles of practices and perspectives of Unani; Homeopathy - History and principles of practices and perspectives of Homeopathy. Phytopharmaceuticals: inventory, taxonomic validation and evaluation of sources.

### **Unit- III**

Introduction, history, scope and applications of Pharmacognosy. Photopharmacy: Plant constituents, identification of different constituents; Classification of drugs; analytical methods- drug adulteration, drug evaluation; phytochemical analysis of crude drugs.

### **Unit- IV**

Drugs of alkaloids, coumarins, tannins, terpenoids and glycosides; Natural pesticides, antibiotics, and poisonous plants. Antimicrobial assay: antibacterial and antifungal screening. Potential drug yielding plants and their marketing. Intellectual Property Rights (IPR), patents, copy rights, trademarks.

#### **Suggested Practicals:**

1. Recording Medicinal Practices and Herbal Formulations of Tribal Medicine.
2. Study of important medicinal plants used in drugs.
3. Field trip to study and identify locally occurring Medicinal plants.
4. Qualitative analysis of crude drugs for different phytochemicals
5. Quantitative estimation of secondary metabolites: Phenolic compounds and alkaloids.
6. Antimicrobial studies to determine MIC and MBC of different solvent extracts

#### **Suggested Readings:**

1. Cotton, C.M. 1996. Ethnobotany: principles and applications.
2. Dey, A.C. 1988. Indian Medicinal Plants and Ayurvedic preparations, Bishen Singh, M. Singh.
3. Gibbs, R.D. 1974. Chemotaxonomy of flowering plants. Montreal & London.
4. Kokate, C.K., A.P. Purohit & S.B. Gokhale. 2000. Pharmacognosy. Nirali Prakashan Publ.



## **BOT – 303 (B): BIO DIVERSITY AND CONSERVATION**

### **Unit – 1**

Perception and History; Biodiversity and its components, genetic, species and ecosystem diversity. Magnitude and distribution of biodiversity; global biodiversity hotspots- hotspots in India; India-a mega diversity center-floristic richness and Centers of Plant Diversity of India; Agro diversity - vavilov centers of crop plants; Exotics and Invasive species.

### **Unit – II**

#### **Status and Analysis of Species Diversity:**

Direct use value; food, medicinal value, industrial values, ecotourism; Indirect value: biological control, environmental modulation, ecological services; Economic importance of fiber, medicine, yielding gums and resins and essential oils, timber and non-timber forest products and aromatic plants.

### **Unit – III**

History of Conservation, Principles of conservation; the process of extinction; threats to biodiversity; IUCN red list categories; threatened plants of India; *in situ* conservation of biodiversity: natural protected areas-biosphere reserves, wildlife sanctuaries, national parks and sacred groves with reference to India; *ex situ* conservation- significant botanical gardens of the world and India, and gene banks.

### **Unit – IV**

#### **Strategies for Conservation of Diversity:**

Global strategy for plant conservation (GSPC); Brief account on national and international conservation organizations- WWF, UNEP, IUCN; Biodiversity laws; Biological diversity act, 2002 ; Brief account on International agreements on biodiversity conservation-CBD, CITES, RAMSAR; Joint Forest Management; Biodiversity Registers; Bio-security in India.

#### **Suggested Readings:**

1. Chandel, K.P.S ,Shukla, G. and Sharma, N. 1996. Biodiversity in Medicinal and Aromatic Plants in India: Conservation and Utilization. National Bureau of Plant Genetic Resources, New Delhi.
2. Chaudhuri, A.B &Sarkar, D.D. 2002. Biodiversity Endangered. Scientific Publishers, New Delhi
3. Clive Hambler, 2004. Conservation. Cambridge University Press, Cambridge, UK
4. Frankel , O.H, Brown, AHD & Burdon, J.J. 1995. The Conservation of Plant Diversity, Cambridge Univesity Press, Cambridge, U.K
5. GobrielMelchias. 2001. Biodiversity and Conservation. Oxford IBH Publishers, New Delhi.

6. Christopher, D., Cook, K. 1996. Aquatic and Wet Land Plants of India Oxford University Press, New Delhi, India.
7. Mehra, K.L. Arora, R.K. 1982. Plant Genetic Resources of India – Their Diversity & Conservation, Vol III, Chapman Hall, U.K

## **ECO-207: PERSONALITY ENHANCEMENT & LEADERSHIP**

### **UNIT-I**

**INTRODUCTION TO PERSONALITY ENHANCEMENT-** The concept personality- Dimensions of theories of Freud & Erickson- Personality — significance of personality development. The concept of success and failure: What is success? - Hurdles in achieving success - Overcoming hurdles - Factors responsible for success — What is failure - Causes of failure. SWOT analysis.

### **UNIT – II**

**ATTITUDE & MOTIVATION-** Attitude - Concept - Significance - Factors affecting attitudes - Positive attitude - Advantages Negative attitude - Disadvantages - Ways to develop positive attitude - Difference between personalities having positive and negative attitude. Concept of motivation - Significance - Internal and external motives - Importance of self motivation- Factors leading to demotivation.

### **UNIT –III**

**SELF-ESTEEM-** Term self-esteem - Symptoms - Advantages - Do's and Don'ts to develop positive self-esteem— Low self esteem- Symptoms - Personality having low self esteem- Positive and negative self-esteem. Interpersonal Relationships— Defining the difference between aggressive, submissive and assertive behaviours- Lateral thinking.

### **UNIT –IV**

**INTRODUCTION TO LEADERSHIP-** Definition and meaning, Importance, Leadership and Management, Leader vs Manager, Essential qualities of an effective leader. Theories of Leadership: Trait theory, Behavioural theories, Contingency theory.

### **UNIT-V**

**LEADERSHIP CHARACTERISTICS-** Types of Leaders Importance of Leadership — Leadership Skills — Building and Leading Efficient Teams Leadership styles: Traditional, Transactional, Transformational, Inspirational and servant leadership and Emerging issues in leadership: Emotional Intelligence and leadership, Trust as a factor, Gender and Leadership. Leadership Qualities of Abraham Lincoln, Mahatma Gandhi, Prakasam Pantulu, Dr. B.R. Ambedkar and J.R.D. Tata.

### **References:**

1. GirishBatra, Experiments in Leadership, Chennai: Notion Press, 2018.
2. Mitesh Khatri, Awaken the Leader in You. Mumbai: Jaico Publishing House, 2013.
3. Carnegie Dale. Become an Effective Leader. New Delhi: Amaryllis, 2012
4. Hall. C.S., Lindzey. C. & Campbell, J.B Theories of Personality. John Wiley & Sons, 5. 1998.
5. Organizational Behaviour, M. Parikh and R. Gupta, Tata-McGraw-Hill Education Private Limited.
6. Organizational Behaviour, D. Nelson, I.C Quick and P. Khandelwal, Cengage Publication.

**M.A. ECONOMICS**  
**PAPER – ECO- 105: Economics of Environment**  
**(Revised Syllabus with effect from 2022-2023)**

**Unit-I: The Classical School**

*Adam Smith:* Important Influences - The Theory of Moral Sentiments - Wealth of Nations - The Economic Laws of a Competitive Economy.

*Thomas Malthus:* Historical and Intellectual Setting - Malthus's Population Theory.

*David Ricardo:* Biographical Details - The Currency Question - The Theory of Diminishing Returns and Rent - The Theory of Exchange Value and Relative Prices - The Distribution of Income.

Jeremy Bentham, Jean-Baptiste Say, Nassau William Senior, and John Stuart Mill.

**Unit-II: The Rise of Socialist Thought & German Historical School**

Overview of Socialism - Henri Comte De Saint-Simon - Charles Fourier - Simon de Sismondi - Robert Owen - Louis Blanc - Charles Kingsley.

Marxian Socialism: Biographical Details and Intellectual Influences - Marx's Theory of History - Assessment of Marx's Economics.

**The German Historical School:** Overview: Friedrich List - Wilhelm Roscher, Gustav Schmoller, Max Weber.

**Unit-III: The Neoclassical School**

Alfred Marshall, Monetary Economics & Departure from Pure Competition

Marshall's Life and Method - Utility and Demand - Supply - Equilibrium Price and Quantity - Distribution of income - increasing and Decreasing Cost Industries.

**Monetary Economics:** John Gustav Wickshell - Irving Fisher - George Hawtrey.

**Departure from Pure Competition:** Piero Sraffa - Chamberlin - Joan Robinson.

**Unit-IV: The Keynesian School**

Overview of the Keynesian School - John Maynard Keynes - The Keynesian School: Developments since Keynes: Alvin H. Hansen - Paul A. Samuelson - The Post-Keynesians - The New-Keynesians.

**Unit -V: Theories of Economic Growth and Development & The Chicago School**

Sir Roy F. Harrod and Evsey Domar - Robert M. Solow - Joseph Alois Schumpeter - Ragnar Nurkse - W. Arthur Lewis - Theodore W. Schultz.

**The Chicago School:** Overview - Milton Friedman - Robert E Lucas, Jr. - Gary S. Becker.

**References:** [Please refer to the Latest Editions]

1. Eric Roll, *A History of Economic Thought*, Rupa and Co, New Delhi.
2. Ingrid Hahne Rima, *Development of Economic Analysis*, Richard D. Irwin, inc. Illinois.
3. John Fred Bell, *A History of Economic Thought*, The Ronald Press Company, New York.
4. Joseph A Schumpeter, *Ten Great Economists, from Marx to Keynes*, OUP, New York.
5. Lewis H. Haney, *History of Economic Thought*, The Macmillan Company, New York.
6. Overton H. Taylor, *A History of Economic Thought*, McGraw-Hill Company, Inc. New York.
7. Overton H. Taylor, *A History of Economic Thought*, McGraw-Hill Company, Inc. New York.
8. Spiegel H W, *Development of Economic Thought*, John Wiley and Sons, inc., New York.
9. Stanley L. Brue, *The Evolution of Economic Thought*, The Dryden Press, Fort Worth.

Course Code & Title	<b>22RMAB303B: MARINE BIODIVERSITY</b>		
Programme	Marine Biology	Semester	III
Number of Credits	04	Number of Hours	60
Course Objectives	<ol style="list-style-type: none"> <li>1. To know the Marine Biodiversity conservation and significance,</li> <li>2. To create knowledge about threats to Marine Biodiversity</li> <li>3. To understand biodiversity conservation strategies, policies and legislations.</li> <li>4. To understand the marine conservation strategies.</li> </ol>		
<b>UNIT</b>	<b>Content</b>		<b>Number of Hours</b>
I	<p>Introduction to Marine Biodiversity: Origin of conservation biology, divisions of biodiversity, Understanding the marine biodiversity and conservation, keystone species, ecosystem functioning, world's marine biological diversity, marine hot spots-cold species, hydrothermal hotspots, marine biosphere reserves and their importance in India, Values of biodiversity-ecological, economic, ethical, and conservation feasibility values.</p>		15
II	<p>Threats to Marine Biodiversity: Species diversity, species richness, species evenness, factors affecting species diversity. Biodiversity with reference to mangroves and coral reefs. Species extinction vulnerability to extinction, habitat destruction degradation and fragmentation with reference to coral reefs and mangroves, maximum sustainable yield (MSY), alien species, global climate change-coral bleaching</p>		15
III	<p>Conservation Strategies: Importance of conservation, IUCN and their importance, various conservation strategies- germplasm banks, crytopreservation, marine protected areas, sea ranching, mesh size regulation, TED, fishing holidays, conservation and development at national international level</p>		15
IV	<p>Conservation policies and Legislations : Various legislations and regulations in conservation of marine biodiversity the role of MoEn and Finconservation, NGO's involvement in conservation and various case studies related to coastal marine conservation science and policy with reference to Indian maritime states</p>		15
Reference Books	<ol style="list-style-type: none"> <li>1. Biodiversity measurement and estimation. Chapman &amp; Hall, 140pp. Qubiroga, H.,2006.</li> <li>2. Marine biodiversity, SPKriinger,353pp. Richard B.Primack., m2002.</li> <li>3. Essential of conservation biology-3rd edition,simauer assoc.Inc.Pub., USA, 698pp. Ruth,2002.</li> <li>4. Dynamic modeling for marine conservation. Springer ,446pp, Singh, J.S.,S.P.SinghadS. R. Guptha.,2006.</li> </ol>		

	5. Ecology, Environment and Resource conservation., Anamaya pub., NewDelhi, 688pp.
Course outcome	On the successful completion of course, students will be able to CO1: Understand the Marine Biodiversity Conservation and its significance CO2: Understand and Identify threats to Marine Biodiversity CO3: Know the Biodiversity conservation strategies, polices and Legislations involved in Biodiversity conservation. CO4: Explain the marine conservation strategies.



**VIKRAMA SIMHAPURI UNIVERSITY::NELLORE**  
**DEPARTMENT OF PHYSICS**

Syllabus for M.Sc. Physics (2 Year Course) for V.S. University Constituent College(s) and Affiliated Colleges under the jurisdiction of Vikrama Simhapuri University, Nellore with effect from the Academic Year 2022-2023

**PHY207: PERSONALITY ENHANCEMENT AND LEADERSHIP**

**UNIT-I : INTRODUCTION TO PERSONALITY ENHANCEMENT**

The concept personality - Dimensions of theories of Freud & Erickson- personality - significant of personality development. The concept of success and failure: What is success? - Hurdles in achieving success - Overcoming hurdles - Factors responsible for success - What is failure - Causes of failure. SWOT analyses.

**UNIT – II : ATTITUDE & MOTIVATION**

Attitude - Concept - Significance - Factors affecting attitudes - Positive attitude - Advantages Negative attitude - Disadvantages - Ways to develop positive attitude - Difference between personalities having positive and negative attitude. Concept of motivation - Significance - Internal and external motives - Importance of self inotivation - Factors leading to de-motivation.

**UNIT –III : SELF-ESTEEM**

Term self-esteem - Symptoms - Advantages - Do's and Don'ts to develop positive self-esteem - Low self esteem - Symptoms - Personality having low self esteem - Positive and negative self-esteem. Interpersonal Relationships - Defining the difference between aggressive, submissive and assertive behaviours - Lateral thinking.

**UNIT –IV : INTRODUCTION TO LEADERSHIP**

Definition and meaning, Importance, Leadership and Management, Leader vs Manager, Essential qualities of an effective leader. Theories of Leadership: Trait theory, Behavioral theories, Contingency theory.

**UNIT-V : LEADERSHIP CHARACTERISTICS**

Types of Leaders Importance of Leadership - Leadership Skills - Building and Leading Efficient Teams Leadership styles: Traditional, Transactional, Transformational, Inspirational and servant leadership and Emerging issues in leadership: Emotional Intelligence and leadership, Trust as a factor, Gender and Leadership. Leadership Qualities of Abraham Lincoln, Mahatma Gandhi, Prakasam Pantulu, Dr. B.R. Ambedkar and J.R.D. Tata.

References:

1. Girish Batra, Experiments in Leadership, Chennai: Notion Press, 2018.
2. Mitesh Khatri, Awa ken the Leader in You. Mumbai: Jaico Publishing House, 2013.
3. Carnegie Dale. Become an Effective Leader. New' Del hi: Amaryllis, 2012
4. Hall. C.S.. Lindzei'. Ci. & Campbell, J.B Theories of Personality. John Wiley & Sons, 5. 1998.
5. Organizational Behaviour, M. Parikh and R. Gupta, Tata-McGraw-Hill Education Private Limited.
6. Organizational Behavior, D. Nelson, I.C Quick and P. Khandelwal, Cengage Publication.

  
Head

Department of Physics  
V.S. UNIVERSITY COLLEGE  
KAVALI-524 201.

Course Code & Title	22RMAB103B: Marine Ecology		
Programme	Marine Biology	Semester	I
Number of Credits	04	Number of Hours	60
Course Objectives	<ol style="list-style-type: none"> <li>1. Student will learn about the chemical factors of the marine environment.</li> <li>2. Identify about the deep sea environment and adaptations of sea fauna and their ecological factors</li> <li>3. Acquire knowledge related to aquatic environment.</li> <li>4. Understand the concept of population and community ecology</li> </ol>		
UNIT	Content	Number of Hours	
I	<b>Physico – Chemical Properties of the Sea:</b> Physical Characteristics of the marine environment- Temperature, Temperature-salinity relationship, light, Pressure, Tides, Currents, Waves. Chemical Characteristics of the marine environment-Salinity, Oxygen, carbon dioxide, P <sup>H</sup> , Nitrogen, Phosphorus, Calcium, organic matter. Coral reef biome.	16	
II	<b>Population Ecology:</b> Characteristics of a population-Growth rate, Natalty, Mortality. Dispersal, Biotic potential and concept of carrying capacity. Population growth form, Logistic curve. Concept of density dependent and density independent action in population control.	14	
III	<b>Population Interactions:</b> Negative interactions - Competition, Predation, prey predator relationship, parasitism and parasitic adaptations, antibiosis. Positive interactions: Commensalism, Proto cooperation and mutualism. Ecosystem modelling.	16	
IV	<b>Community Ecology:</b> Characteristics of a community - Community dominance, species diversity indices, concept of niche, ectones and the concept of edge effect. Ecological succession: Causes, trends and basic types of succession, general process of succession. Hydrosphere and Lithosphere.	14	
Reference Books	<ol style="list-style-type: none"> <li>1. Begon, M., J.L. Harper and CR Townsend. Ecology, Individuals, Populations and Communities. Blackwell Science, Oxford, UK.</li> <li>2. Koromondy, E.J. Concepts of ecology, Prentice and Hall, New Delhi.</li> <li>3. Clarke, GL. Elements of Ecology, New York: John wiley andsons.</li> <li>4. Odum, EP., Fundamentals of Ecology. Philadelphia; WB Saunders.</li> <li>5. Krebs, CJ. Ecology. Harper &amp; Row, New York.</li> <li>6. Jorgensen, S.E. Fundamentals of Ecological modelling Elsevier, New York.</li> </ol>		

<b>Course Code &amp; Title</b>	<b>Personality Enhancement &amp; Leadership</b>		
<b>Programme</b>		<b>Semester</b>	<b>II</b>
<b>Number of Credits</b>	<b>04</b>	<b>Number of Hours</b>	<b>50</b>
<b>Course Objectives</b>	CO1: To gain knowledge on introduction to personality enhancement CO2: To describe the concepts of attitude and motivation CO3: To give the awareness on positive and negative self esteem CO4: To acquire knowledge on importance of leadership qualities. CO5: To discuss leadership characteristics, building and leading efficient teams.		
<b>UNIT</b>	<b>Content</b>	<b>Number of Hours</b>	
I	INTRODUCTION TO PERSONALITY ENHANCEMENT- The concept personality- Dimensions of theories of Freud & Erickson-personality- Significant of personality development. the concept of success and failure: What is Success?- Hurdles in achieving success- Overcoming hurdles- Factors responsible for success- What is failure- Causes of failure- SWOT analyses.	12	
II	ATTITUDE & MOTIVATION- Attitude- Concept- Significance- Factors affection attitudes- Positive attitude- advantages- Negative attitude- Disadvantages – ways to development positive attitude-Difference between personalities having positive and negative attitude. Concept of motivation- Significance –Internal and external motives- Importance of self- motivation- Factors leading to de-motivation.	12	
III	SELF-ESTEEM- Term self-esteem- Symptoms- Advantages- Do's and Don'ts to develop positive self-esteem- Low self esteem- Symptoms- Personality having low self esteem- Positive and negative self-esteem. Interpersonal Relationships. Defining the difference between aggressive, submissive and assertive behaviours- Lateral thinking.	12	
IV	INTRODUCTION TO LEADERSHIP- Definition and meaning, Importance, Leadership and Management, Leader vs Manager, Essential qualities of an effective leader. Theories of Leadership: Trait theory, Behavioral theories, Contingency theory.	10	
V	LEADERSHIP CHARACTERISTICS- Types of Leaders- Importance of Leadership- Leadership Skills- Building and Leading Efficient Teams- Leadership styles: Traditional, Transactional, Transformational, Inspirational and servant leadership and Emerging issues in leadership: Emotional Intelligence and leadership, Trust as a factor, Gender and Leadership. Leadership Qualities of Abraham Lincoln, Mahatma Gandhi, Prakasham pantulu, Dr. B.R. Ambedkar and J.R.D. Tata.	14	
<b>Reference Books</b>	1. Girish Batra, Experiments in Leadership, Chennai, Notion Press, 2018. 2. Mitesh Khatri, A waken the Leader in You, Mumbai, Jaiko publishing House,		



	<p>2013.</p> <p>3. Carnegie Dale, Become an Effective Leader, New Delhi, Amaryllis, 2012.</p> <p>4. Hall.C.S.Lindzey.G&amp;Campbell,J.B.Theories of personality, John Wiley &amp; Sons .1998.</p> <p>5. Organizational Behavior, M.Parikh and R.Gupta, Tata- McGraw-Hill Education Private Limited.</p> <p>6. Organisational Behaviour, D.Nelson, J.C. Quick and P.Khandelwal, Cengage publication.</p>
<b>Course outcome</b>	<p>On the successful completion of course, students will be able to</p> <p>CO1: Know the knowledge related to personality development</p> <p>CO2: Gain the knowledge in related to attitude and motivation</p> <p>CO3: Improve the self esteem advantages and nature</p> <p>CO4: Gain the knowledge related to leadership qualities</p> <p>CO5: Improve the Importance of Leadership skills</p>

<b>Course Code &amp; Title</b>	<b>22RMAB301: Coastal Aquaculture</b>		
<b>Programme</b>	<b>Marine Biology</b>	<b>Semester</b>	<b>III</b>
<b>Number of Credits</b>	<b>04</b>	<b>Number of Hours</b>	<b>60</b>
<b>Course Objectives</b>	<ol style="list-style-type: none"> <li>1. This paper is planned to teach in the line s of understanding the candidate species of important cultivable fin and shell fishes.</li> <li>2. To gaining knowledge in the food and feeding of cultivable species, artificial seed production through hatchery technology.</li> <li>3. To acquaint technology related to farm management and their detailed methods of farming, disease and health management of shrimp species.</li> </ol>		
<b>UNIT</b>	<b>Content</b>		<b>Number of Hours</b>
I	<b>Shrimp Hatchery Management:</b> Importance of Coastal Aqua culture – Global scenario, Present status of shrimp farming in India; natural collection and resources of shrimp seed. Shrimp hatchery management, techniques of induced breeding, larval rearing, packing and transportation. Selection criteria for shrimp seed; seed quality rating.		16
II	<b>Shrimp culture management:</b> Culture practices – traditional, extensive, semi- intensive and intensive; culture systems- monoculture and poly culture. Shrimp culture management – pre-stocking, stock and post stocking management – water quality management, feed management. Best management practices (BMP's) in shrimp farming.		14
III	Design and construction of shrimp farms and hatcheries: Selection of site; topography, water availability and supply, soil conditions. Design and layout of shrimp farms – water intake system, Drainage system. Design and construction of shrimp hatcheries; structure and construction, different accessories used in coastal aqua farms and hatcheries.		14

IV	Diseases and health management: Control of predators and parasites. Viral and bacterial diseases in shrimp - cause, symptoms, prophylactic and therapeutic treatments. Nutritional deficiency diseases, environmental stress diseases. Role of probiotics in diseases prevention. Disease diagnosis; microbiological , immunological and molecular diagnosis methods.	16
<b>Reference Books</b>	<ol style="list-style-type: none"> <li>1. Pillay, T.V.R., 1990. Aquaculture - principles and Practices. Fishing News Books.</li> <li>2. Samuel Paulraj, 1994. Shrimp Farming Techniques: Problems and Solutions. Palani pub.</li> <li>3. Anand S., Upadhyay, 1995. Hand Book on Design, Construction and Equipments in Coastal Aquaculture. Blackie Academic Pub.</li> <li>4. Stickney, 1995. Introduction to Aquaculture. John Wiley &amp; Sons, New York.</li> <li>5. Coche, G. and J.F. Muir, 1996. Simple Methods for Aquaculture Pond Construction for Freshwater Fish Culture : Pond farm structures and layouts. Daya Pub.</li> <li>6. Conroydas, R. and L. Heruman, 1997. Text Book of Fish Disease. Narendra Pub.</li> <li>7. John E. Bardach, 1997. Sustainable Aquaculture. John Wiley &amp; Sons, New York.</li> <li>8. James, W. Meade, 1998. Aquaculture Management, CBS pub., New Delhi.</li> <li>9. Robert R. Stickney (ed.), 2000. Encyclopedia of Aquaculture. John Wiley and Sons, Inc., New York.</li> <li>10. Joachim W. Hertrampf and Felicitas Piedad - Pascal, 2000. Hand Book on Ingredients for Aquaculture Feeds. Kluwer Academic Publishers, London</li> </ol>	
<b>Course outcome</b>	<ol style="list-style-type: none"> <li>1. Knowledge on various culture practices and intensive management practices of shrimp <i>P.monodon</i> and <i>L.vannamei</i>.</li> <li>2. Understanding on the culture methods and seed production of important cultivable shrimp species.</li> <li>3. Learning about various diseases diagnosis and preventive/ treatment measures of disease.</li> </ol>	

<b>Course Code &amp; Title</b>	<b>22RMAB302: Marine Pollution and Toxicology</b>		
<b>Programme</b>	<b>Marine Biology</b>	<b>Semester</b>	<b>III</b>
<b>Number of Credits</b>	<b>04</b>	<b>Number of Hours</b>	<b>60</b>
<b>Course Objectives</b>	To know the key aspects of <ol style="list-style-type: none"> <li>1. Marine pollution, its impact on Marine Life, Eutrophication</li> <li>2. Toxicological aspects associated with Marine life, like testing of toxicity, magnification etc.</li> <li>3. Explain about the pollution in the marine ecosystem</li> <li>4. Understand the different metal, thermal and radioactive pollution status of marine environment.</li> </ol>		
<b>UNIT</b>	<b>Content</b>	<b>Number of Hours</b>	

I	<b>Marine Pollution &amp; Toxicology :</b> Marine pollution – definition – major pollutants – sources , transport path , dynamics. Toxicology – lethal and sub lethal effects of pollutants to marine organisms, bio concentrations, bioaccumulation and biomagnifications – methods of toxicity testing, factors influencing toxicity – synergistic and antagonistic effects.	14
II	<b>Sewage and plastic pollution:</b> Sewage pollution – industrial, agricultural and domestic, impact on marine environment treatment methods. Eutrophication and ecological significance. Plastics and litter; source and impact in the marine environment.	14
III	<b>Heavy metal and pesticide pollution :</b> Heavy metal pollution – sources, distribution , ecological impacts and analytical approaches; pesticide pollution – classification, sources , distribution, and ecological impacts with special reference to marine fishes, birds and mammals.	16
IV	<b>Oil, Thermal and Radioactive Pollution :</b> Oil Pollution – composition, sources, biological impacts on fishes, birds, mammals, Treatment techniques. Thermal pollution- sources and ecological impacts. Radioactive pollution – sources (natural and artificial) biological effects of radiation.	16
<b>Reference Books</b>	<ol style="list-style-type: none"> <li>1. Clark R.B 1992. Marine pollution 3rd edition Clarendon, Press Oxford.</li> <li>2. Williams 1996. Introduction to Marine Pollution Control. John Wiley.</li> <li>3. Michael J. Kennish 1994. Practical Handbook on Estuarine and Marine Pollution</li> <li>4. Johnston, R. (ed), 1976. Marine Pollution, Academic Press, London.</li> <li>5. Goldberg, E. D. 1974. The Health of the oceans, UNESCO Press. Paris.</li> <li>6. Park, P.K, Kester D.R., J.W. Deudall and B.H Ketchum, 1983. Wastes in the Ocean. Vols. 1 to 3. Wiley Inter science Publishers, New York.</li> </ol>	

Course Code & Title	<b>22RMAB303B: MARINE BIODIVERSITY</b>		
Programme	Marine Biology	Semester	III
Number of Credits	04	Number of Hours	60
Course Objectives	<ol style="list-style-type: none"> <li>1. To know the Marine Biodiversity conservation and significance,</li> <li>2. To create knowledge about threats to Marine Biodiversity</li> <li>3. To understand biodiversity conservation strategies, policies and legislations.</li> <li>4. To understand the marine conservation strategies.</li> </ol>		
<b>UNIT</b>	<b>Content</b>		<b>Number of Hours</b>
I	Introduction to Marine Biodiversity: Origin of conservation biology, divisions of biodiversity, Understanding the marine biodiversity and conservation, keystone species, ecosystem functioning, world's marine biological diversity, marine hot spots-cold species, hydrothermal hotspots, marine biosphere reserves and their importance in India, Values of biodiversity-ecological, economic, ethical, and conservation feasibility values.		15

II	Threats to Marine Biodiversity: Species diversity, species richness, species evenness, factors affecting species diversity. Biodiversity with reference to mangroves and coral reefs. Species extinction vulnerability to extinction, habitat destruction degradation and fragmentation with reference to coral reefs and mangroves, maximum sustainable yield (MSY), alien species, global climate change-coral bleaching	15
III	Conservation Strategies: Importance of conservation, IUCN and their importance, various conservation strategies- germplasm banks, crytoreservation, marine protected areas, sea ranching, mesh size regulation, TED, fishing holidays, conservation and development at national international level	15
IV	Conservation policies and Legislations : Various legislations and regulations in conservation of marine biodiversity the role of MoEn and Finconservation, NGO's involvement in conservation and various case studies related to coastal marine conservation science and policy with reference to Indian maritime states	15
Reference Books	<ol style="list-style-type: none"> <li>1. Biodiversity measurement and estimation. Chapman &amp; Hall, 140pp. Qubiroga, H.,2006.</li> <li>2. Marine biodiversity, SPKringer,353pp. Richard B.Primack., m2002.</li> <li>3. Essential of conservation biology-32rdedition,simauer assoc.Inc.Pub., USA, 698pp. Ruth,2002.</li> <li>4. Dynamic modeling for marine conservation. Springer ,446pp, Singh, J.S.,S.P.SinghadS. R. Guptha.,2006.</li> </ol>	

	5. Ecology, Environment and Resource conservation., Anamaya pub., NewDelhi, 688pp.
Course outcome	<p>On the successful completion of course, students will be able to</p> <p>CO1: Understand the Marine Biodiversity Conservation and its significance</p> <p>CO2: Understand and Identify threats to Marine Biodiversity</p> <p>CO3: Know the Biodiversity conservation strategies, polices and Legislations involved in Biodiversity conservation.</p> <p>CO4: Explain the marine conservation strategies.</p>

Programme	MCA	Semester	Second		
Course Code	22RACMCA2LS	Course Name	<b>Personality Enhancement Development And Leadership</b>		
Course Category	Core	Hours/Week	L	T	P
			3	1	0
		Credits	4		

Course Objectives	<p>To introduce the concepts of personality enhancement and the concept of success and failure in personality enhancement.</p> <p>To provide fundamental knowledge on significance on Motivation and Attitude.</p> <p>To introduce the concept of self esteem and Inter personal relationship.</p> <p>To introduce the importance of effective leadership qualities.</p>				
Unit-1	<p><b>Introduction To Personality Enhancement</b> - The concept personality Dimensions of theories of Freud &amp; Erickson- personality – significant of personality development. The concept of success and failure: What is success? - Hurdles in achieving success - Overcoming hurdles - Factors responsible for success – What is failure - Causes of failure. SWOT analyses.</p>				
Unit-2	<p><b>Attitude &amp; Motivation - Attitude</b> - Concept - Significance - Factors affecting attitudes - Positive attitude - Advantages – Negative attitude - Disadvantages - Ways to develop positive attitude - Difference between personalities having positive and negative attitude. Concept of motivation - Significance - Internal and external motives - Importance of self-motivation- Factors leading to de-motivation.</p>				
Unit-3	<p><b>Self-Esteem</b> - Term self-esteem - Symptoms - Advantages - Do's and Don'ts to develop positive self-esteem – Low self esteem - Symptoms - Personality having low self esteem - Positive and negative self-esteem. Interpersonal Relationships – Defining the difference between aggressive, submissive and assertive behaviours - Lateral thinking.</p>				
Unit-4	<p><b>Introduction To Leadership</b> - Definition and meaning, Importance, Leadership and Management, Leader vs Manager, Essential qualities of an effective leader. Theories of Leadership: Trait theory, Behavioral theories, Contingency theory.</p>				
Text Books	<p>Girish Batra, Experiments in Leadership, Chennai: Notion Press, 2018.</p> <p>Mitesh Khatri, Awaken the Leader in You, Mumbai: Jaico Publishing House, 2013.</p> <p>Carnegie Dale, Become an Effective Leader, New Delhi: Amaryllis, 2012.</p> <p>Hall, C.S., Lindzey. G. &amp; Campbell, J.B Theories of Personality. John Wiley &amp; Sons, 1998.</p> <p>Organizational Behaviour, M. Parikh and R. Gupta, Tata-McGraw-Hill Education Private Limited.</p>				
References	<p>Organizational Behavior, D. Nelson, J.C Quick and P. Khandelwal, Cengage Publication</p>				
Programme	M.Sc Statistics	Semester	Second		
Course Code	22RPEL201	Course Name	Personality Enhancement Development And Leadership		
Course Category	Core	Hours/Week	L	T	P
			3	1	0
		Credits	4		

Course Objectives	<p>To introduce the concepts of personality enhancement and the concept of success and failure in personality enhancement.</p> <p>To provide fundamental knowledge on significance on Motivation and Attitude.</p> <p>To introduce the concept of self esteem and Inter personal relationship.</p> <p>To introduce the importance of effective leadership qualities.</p>
Unit-1	Introduction To Personality Enhancement - The concept personality Dimensions of theories of Freud & Erickson- personality – significant of personality development. The concept of success and failure: What is success? - Hurdles in achieving success - Overcoming hurdles - Factors responsible for success – What is failure - Causes of failure. SWOT analyses.
Unit-2	Attitude & Motivation - Attitude - Concept - Significance - Factors affecting attitudes - Positive attitude - Advantages – Negative attitude - Disadvantages - Ways to develop positive attitude - Difference between personalities having positive and negative attitude. Concept of motivation - Significance - Internal and external motives - Importance of self-motivation- Factors leading to de-motivation.
Unit-3	Self-Esteem - Term self-esteem - Symptoms - Advantages - Do's and Don'ts to develop positive self-esteem – Low self esteem - Symptoms - Personality having low self esteem - Positive and negative self-esteem. Interpersonal Relationships – Defining the difference between aggressive, submissive and assertive behaviours - Lateral thinking.
Unit-4	Introduction To Leadership - Definition and meaning, Importance, Leadership and Management, Leader vs Manager, Essential qualities of an effective leader. Theories of Leadership: Trait theory, Behavioral theories, Contingency theory.
Text Books	<p>Girish Batra, Experiments in Leadership, Chennai: Notion Press, 2018.</p> <p>Mitesh Khatri, Awaken the Leader in You, Mumbai: Jaico Publishing House, 2013.</p> <p>Carnegie Dale, Become an Effective Leader, New Delhi: Amaryllis, 2012.</p> <p>Hall, C.S., Lindzey. G. &amp; Campbell, J.B Theories of Personality. John Wiley &amp; Sons,1998.</p> <p>Organizational Behaviour, M. Parikh and R. Gupta, Tata-McGraw-Hill Education Private Limited.</p>
References	Organizational Behavior, D. Nelson, J.C Quick and P. Khandelwal, Cengage Publication